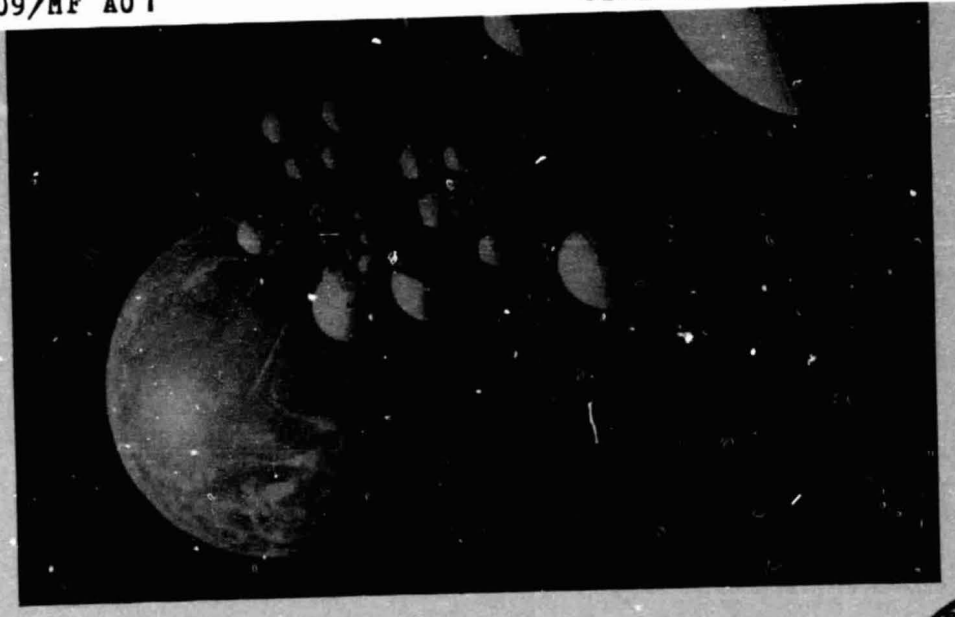
REPORT NO. GDC-GPP-79-006 (IIA)
CONTRACT NAS8-33527
JUNE 1980

GEOSTATIONARY PLATFORM SYSTEMS CONCEPTS DEFINITION STUDY

FINAL REPORT
VOLUME IIA APPENDIXES
BOOK 2 OF 2



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for the

National Aeronautics and Space Administration
GEORGE C. MARSHALL SPACE FLIGHT CENTER
Huntsville, Alabama

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FINAL REPORT

GEOSTATIONARY PLATFORM SYSTEMS CONCEPTS DEFINITION STUDY

VOLUME IIA APPENDIXES BOOK 2 OF 2

JUNE 1980

Submitted to
GEORGE C. MARSHALL SPACE FLIGHT CENTER
National Aeronautics and Space Administration
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GEOSTATIONARY PLATFORM SYSTEMS
CONCEPTS DEFINITION STUDY
FINAL REPORT

VOLUME I	EXECUTIVE SUMMARY
VOLUME II	TECHNICAL ANALYSIS, TASKS 1 – 5, 3A
BOOK 1 OF 3	TASKS 1 AND 2
BOOK 2 OF 3	TASK 3
BOOK 3 OF 3	TASKS 4, 5, AND 3A
VOLUME II(A)	TECHNICAL APPENDIXES
BOOK 1 OF 2	APPENDIX A – G
➧ BOOK 2 OF 2	APPENDIX H – L
VOLUME III	COSTS AND SCHEDULES, TASK 6

This report is submitted in fulfillment of NASA/MSFC Contract NAS8-33527.

William T. Carey, Chief
Applications Group, PS06
George C. Marshall Space Flight Center
Huntsville, Alabama

1 July 1980

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APPENDIX H

SERVICING FLIGHT ANALYSIS

APPENDIX H

SERVICING FLIGHT ANALYSIS

Includes

- o Shuttle and OTV costs per MSFC data (plus low cost Centaur (r') @ $50M)
- o RTS costs per MSFC info
  - Reused: $2M per flight
  - Expended: $32M per flight
- o Two locations/traffic models
  - Western Hemisphere/Nominal
  - Western and Atlantic/High

Excludes

- o Cost of items being transported to GEO and installed/exchanged/resupplied
  - Payload equipment
  - Bus subsystem equipment
  - Batteries and propellant
- o Packaging cost of the above items

MISSION LIFE VS. SERVICING CONSIDERATIONS

Operating Mode Definitions

MODE B — Platforms are designed for 8 years life. They are replaced by another platform for years 9 - 16. They are not serviced on-orbit.

8 year life is considered to be state-of-the-art technology and is the nominal design point for weight and cost.

Critical items are dual-redundant.

MODE C — Platforms are designed for 16 years life. They are not serviced on-orbit.

Critical items are triple-redundant.

Extra effort will be required to design and produce components for 16 year life.

We have already assessed a weight penalty of +29% over the 8 year life subsystems for the 16 year life subsystems.

Development of batteries that will last for 16 years is an extention of the state-of-the-art. We are assuming that it can be done – for a price.

MODE C' Platforms are designed for 16 years life; however, they are designed for resupply of propellants and replacement of batteries at 8 years.

All other subsystem and payload equipment must last for 16 years.

The subsystems have triple redundancy and a +29% weight penalty as in Mode C.

MODE E Platforms are designed for 16 years life; however, they are designed for on-orbit servicing of subsystem and payload equipment.

Subsystems and payload equipment are dual-redundant, for highly critical parts. This provides a 10% weight saving over Mode B.

Subsystems and payloads are designed with modularity for on-orbit servicing. This imposes a 25% weight penalty.

The overall weight penalty for Mode E is +12.5% compared to Mode B.

Platforms are designed with a 3 year supply of propellant. This must be replaced at intervals no longer than 3 years, or may be "topped-off" at more frequent intervals if the service vehicle is not fully loaded.

Batteries are replaced at 8-10 years.

During the mission life, 100% of the payload equipment will be replaced for updating purposes (assume production cost only).

During the mission life, 52% of the subsystem equipment (and 100% of batteries) is replaced.

MODE S-1 Servicing Flights (Recoverable Mode)

Assumptions and Groundrules

1. Teleoperator transferred by OTV from LEO → GEO → LEO on each servicing flight. OTV and TELEOP always recovered.
2. Teleoperator mass - LEO → GEO: 873 kg [$M_{RTS(Up)}$]

   - GEO → LEO: 822 kg [$M_{RTS(Dn)}$]

3. Tare weight for resupplied items and propellant is 20% of net weight (includes RTS attachments).

4. Packaging for supplies is not returned to LEO.

MODE S-2 Servicing Flights (Expandable Mode)

Assumptions and Groundrules

1. Teleoperator transferred by OTV from LEO → GEO, and expended after each servicing flight.

2. Teleoperator mass - LEO → GEO: 873 kg [$M_{RTS(Up)}$]

3. Tare weight for resupplied items is 20% of net weight (includes RTS attachments).

4. Packaging for supplies is expended.

5. OTV is expended.

MODE S-3 Servicing Flights (OTV Reusable/RTS Expended)

Assumptions and Groundrules

1. Teleoperator transferred by OTV from LEO → GEO.

2. Teleoperator expended each flight.

3. OTV returned empty to LEO.

4. Teleoperator mass - LEO → GEO: 873 kg

5. Tare weight for resupplied items and propellant is 20% of net weight (includes RTS attachments).

6. Packaging for supplies is not returned to LEO.

SERVICING TRANSPORTATION COST

Includes

- o Shuttle
- o OTV
- o RTS

Excludes

- o Costs of equipment and consumables transported to GEO.

Table H-1. Servicing Flight Costs - Mode C' - Mission Set N
(Mode S-1 Reuseble OTV and RTS)

Item No.	Set No.	No. of Platforms	Total Servicing Mass for 16 Year Mission, kg	(q) 1 STG OTV Ground Mated		(p) 1 STG OTV Space Mated		(l) 2 STG OTV Space Mated	
				No. of Flights at 1160 kg per Flight	Cost at 39 $M per Flight, $M	No. of Flights at 2474 kg per Flight	Cost at 80 $M per Flight, $M	No. of Flights at 13,686 kg per Flight	Cost at 126 $M per Flight, $M
3	52aC'	31	20,243	18	702	9	720	2	(252)
7	33qC'	19	15,357	14	546	7	560	2	(252)
16	36rC'	12	13,373	12	468	6	480	1	(126)
17	37pC'	9	11,422	10	390	5	400	1	(126)
18	54bC'	10	11,185	10	390	5	400	1	(126)
22	38fC'	9	12,023	11	429	5	400	1	(126)
24	39cC'	8	10,710	10	390	5	400	1	(126)
29	56eC'	7	10,675	10	390	5	400	1	(126)
30	56vC'	7	11,440	10	390	5	400	1	(126)
34	40dC'	6	9,256	8	312	4	320	1	(126)
41	41oC'	5	9,710	9	351	4	320	1	(126)
46	42gC'	5	8,796	8	312	4	320	1	(126)
47	43nC'	4	9,870	9	351	4	320	1	(126)
51	43hC'	4	8,912	8	312	4	320	1	(126)
59	47jC'	3	7,786	7	273	4	320	1	(126)
60	47lC'	3	8,251	9	351	4	320	1	(126)
67	48kC'	2	7,786	7	273	4	320	1	(126)
68	48mC'	2	7,786	7	273	4	320	1	(126)

Notes: 1. Costs in 1980 dollars for transportation and RTS at $2M reused.
2. Partial fights rounded up to next integer.
3. Each platform serviced once.

( ) = Lowest cost

Table H-2. Servicing Flight Costs - Mode C' - Mission Set N (Mode S-2 OTV and RTS Expended)

Item No.	Set No.	No. of Platforms	Total Servicing Mass for 16 Year Mission, kg	(r) Centaur Ground Mated		(r') Centaur Ground Mated		(f) IOTV Ground Mated		(p) 1 STG OTV Ground Mated		(n) 1 STG OTV Space Mated			
				No. of Flights at 3663 kg per Flight	Cost at 94 $M per Flight, $M	No. of Flights at 3663 kg per Flight	Cost at 82 $M per Flight, $M	No. of Flights at 4873 kg per Flight	Cost at 91 $M per Flight, $M	No. of Flights at 5829 kg per Flight	Cost at 99 $M per Flight, $M	No. of Flights at 9875 kg per Flight	Cost at 140 $M per Flight, $M	No. of Flights at 22,336 kg per Flight	Cost at 216 $M per Flight, $M
3	52aC'	31	20,243	6	564	6	492	5	455	4	396	2	280	1	(216)
7	33qC'	19	15,357	5	470	5	410	4	364	3	297	2	280	1	(216)
16	36rC'	12	13,373	4	376	4	328	3	273	3	297	2	280	1	(216)
17	37pC'	9	11,422	4	376	4	328	3	273	2	(198)	2	280	1	216
18	54bC'	10	11,185	4	376	4	328	3	273	2	(198)	2	280	1	216
22	38fC'	9	12,023	4	376	4	328	3	273	3	297	2	280	1	(216)
24	39cC'	8	10,718	3	280	3	246	3	273	2	(198)	2	280	1	216
29	56eC'	7	10,675	3	280	3	246	3	273	2	(198)	2	280	1	216
30	56vC'	7	11,440	4	376	4	328	3	273	2	(198)	2	280	1	216
34	40dC'	6	9,256	3	282	3	246	2	182	2	198	1	(140)	1	216
41	41oC'	5	9,710	3	282	3	246	2	182	2	198	1	(140)	1	216
46	42gC'	5	8,796	3	282	3	246	2	182	2	198	1	(140)	1	216
47	43nC'	4	9,870	3	282	3	246	2	182	2	198	1	(140)	1	216
51	43hC'	4	8,912	3	282	3	246	2	182	2	198	1	(140)	1	216
59	47jC'	2	7,786	3	282	3	246	2	182	2	198	1	(140)	1	216
60	47lC'	2	8,251	3	282	3	246	2	182	2	198	1	(140)	1	216
67	48kC'	2	7,786	3	282	3	246	2	182	2	198	1	(140)	1	216
68	48mC'	2	7,786	3	282	3	246	2	182	2	198	1	(140)	1	216

Notes:
1. Costs in 1980 dollars for transportation and RTS at $32M expended.
2. Partial flights rounded up to next integer.
3. Each platform serviced once.

( ) = Lowest cost

Table H-3. Servicing Flight Costs - Mode C' - Mission Set N (Mode S-3 OTV Reusable/RTS Expended)

Item No.	Set No.	No. of Platforms	Total Servicing Mass for 16 Year Mission, kg	(q) OTV Reusable Ground Mated		(p) OTV Reusable Space Mated		(l) 2 STG OTV Reusable Space Mated	
				No. of Flights at 2038 kg per Flight	Cost at 69 $M per Flight, $M	No. of Flights at 4041 kg per Flight	Cost at 110 $M per Flight, $M	No. of Flights at 15,381 kg per Flight	Cost at 156 $M per Flight, $M
3	52aC'	31	20,243	10	690	5	550	2	(312)
7	33qC'	19	15,357	8	552	4	440	1	(156)
16	36rC'	12	13,373	7	483	4	440	1	(156)
17	37pC'	9	11,422	6	414	3	330	1	(156)
18	54bC'	10	11,185	6	414	3	330	1	(156)
22	38fC'	9	12,023	6	414	3	330	1	(156)
24	39cC'	8	10,710	6	414	3	330	1	(156)
29	56eC'	7	10,675	6	414	3	330	1	(156)
30	56vC'	7	11,440	6	414	3	330	1	(156)
34	40dC'	6	9,256	5	345	3	330	1	(156)
41	41oC'	5	9,710	5	345	3	330	1	(156)
46	42gC'	5	8,796	5	345	3	330	1	(156)
47	43nC'	4	9,870	5	345	3	330	1	(156)
51	43hC'	4	8,912	5	[illegible]	3	330	1	(156)
59	47jC'	2	7,786	4	276	2	220	1	(156)
60	47lC'	2	8,251	4	276	2	220	1	(156)
67	48kC'	2	7,786	4	276	2	220	1	(156)
68	48mC'	2	7,786	4	276	2	220	1	(156)

Notes: 1. Costs in 1980 dollars for transportation and RTS at $2M reused; $32M expended.
2. Partial flights rounded up to next integer.
3. Each platform serviced once.

( ) = Lowest cost

Table H-4. Servicing Flight Costs - Mode E - Mission Set N (Mode S-1 Reusable OTV and RTS)

Item No.	Set No.	No. of Platforms	Total Servicing Mass for 16 Year Mission, kg	(q) 1 STG OTV Ground Mated		(p) 1 STG OTV Space Mated		(l) 2 STG OTV Space Mated	
				No. of Flights at 1169 kg per Flight	Cost at 39 $M per Flight, $M	No. of Flights at 2474 kg per Flight	Cost at 80 $M per Flight, $M	No. of Flights at 13,686 kg per Flight	Cost at 126 $M per Flight, $M
5	33aE	19	39,263	34	1,326	16	1,280	7	(882)
11	55qE	15	37,073	32	1,248	15	1,200	7	(882)
21	38rE	9	33,261	29	1,131	14	1,120	7	(882)
25	39bE	8	31,298	27	1,053	13	1,040	7	(882)
26	39pE	8	33,707	28	1,092	14	1,120	7	(882)
33	40cE	6	29,219	25	975	12	960	7	(882)
35	40fE	6	30,370	26	1,014	13	1,040	7	(882)
39	41eE	5	27,808	24	936	12	960	7	(882)
42	41dE	5	26,801	23	897	11	(880)	7	882
43	41vE	5	28,641	25	975	12	960	7	(882)
48	43oE	4	29,026	25	975	12	960	7	(882)
52	43gE	4	27,940	24	936	12	960	7	(882)
56	44nE	3	28,176	25	975	12	960	7	(882)
58	44hE	3	27,186	24	936	11	(880)	7	882
64	47jE	2	24,707	22	858	10	(800)	7	882
66	47lE	2	25,378	22	858	11	(880)	7	882
70	49kE	2	24,707	22	858	10	(800)	7	882
72	50mE	1	22,726	20	(780)	10	800	7	882

Notes: 1. Costs in 1980 dollars for transportation and RTS at $2M reused.
2. Partial flights rounded up to next integer or to 7, whichever is higher.
3. Each platform serviced seven times.

( ) = Lowest cost

Table H-5. Servicing Flight Costs - Mode E - Mission Set N (Mode S-2 OTV and RTS Expended)

Item No.	Set No.	No. of Platforms	Total Servicing Mass for 10 Year Mission, kg	(r) Centaur Ground Mated		(r') Centaur Ground Mated		(f) IOTV Ground Mated		(e) 1 STG OTV Ground Mated		(n) 1 STG OTV Space Mated	
				No. of Flights at 3663 kg per Flight	Cost at 94 $M per Flight, $M	No. of Flights at 3663 kg per Flight	Cost at 82 $M per Flight, $M	No. of Flights at 4873 kg per Flight	Cost at 91 $M per Flight, $M	No. of Flights at 5629 kg per Flight	Cost at 99 $M per Flight, $M	No. of Flights at 9975 kg per Flight	Cost at 140 $M per Flight, $M
5	33aE	19	39,263	11	1,034	11	902	8	728	7	(693)	7	980
11	55qE	15	37,073	11	1,034	11	902	8	728	7	(693)	7	980
21	38rE	9	33,261	9	846	9	738	7	(637)	7	693	7	980
25	39bE	8	31,298	9	846	9	738	7	(637)	7	693	7	980
26	39pE	8	32,707	9	846	9	738	7	(637)	7	693	7	980
33	40cE	6	29,219	8	752	8	656	7	(637)	7	693	7	980
35	40fE	6	30,370	9	846	9	738	7	(637)	7	693	7	980
39	41eE	5	27,808	8	752	8	656	7	(637)	7	693	7	980
42	41dE	5	26,801	8	752	8	656	7	(637)	7	693	7	980
43	41vE	5	28,641	8	752	8	656	7	(637)	7	693	7	980
48	43oE	4	29,026	8	752	8	656	7	(637)	7	693	7	980
52	43gE	4	27,940	8	752	8	656	7	(637)	7	693	7	980
56	44nE	3	28,176	8	752	8	656	7	(637)	7	693	7	980
58	44hE	3	27,186	8	752	8	656	7	(637)	7	693	7	980
64	47jE	2	24,707	7	658	7	(574)	7	637	7	693	7	980
66	47lE	2	25,378	7	658	7	(574)	7	637	7	693	7	980
70	49kE	2	24,707	7	658	7	(574)	7	637	7	693	7	980
72	50mE	1	22,726	7	658	7	(574)	7	637	7	693	7	980

Notes: 1. Costs in 1980 dollars for transportation and RTS at $32M expended.
2. Partial flights rounded up to next integer or to 7, whichever is higher.
3. Each platform serviced seven times.

( ) = Lowest cost

Table H-6. Servicing Flight Costs - Mode E - Mission Set N (Mode S-3 OTV Reusable/RTS Expended)

Item No.	Set No.	No. of Platforms	Total Servicing Mass for 16 Year Mission, k	(q) OTV Reusable Ground Mated		(p) OTV Reusable Space Mated		(l) 2 STG OTV Reusable Space Mated	
				No. of Flights at 2038 kg per Flight	Cost at 69 $M per Flight, $M	No. of Flights at 4041 kg per Flight	Cost at 110 $M per Flight, $M	No. of Flights at 15,381 kg per Flight	Cost at 156 $M per Flight, $M
5	33aE	19	39,263	20	1,380	10	1,100	7	(1,092)
11	55qE	15	37,073	19	1,311	10	1,100	7	(1,092)
21	38rE	9	33,261	17	1,173	9	(990)	7	1,092
25	38bE	8	31,298	16	1,104	8	(880)	7	1,092
26	39pE	8	32,707	16	1,104	8	(880)	7	1,092
33	40cE	6	29,219	15	1,035	8	(880)	7	1,092
35	40fE	6	30,370	15	1,035	8	(880)	7	1,092
39	41eE	5	27,808	14	966	7	(770)	7	1,092
42	41dE	5	26,801	14	966	7	(770)	7	1,092
43	41vE	5	28,641	14	966	7	(770)	7	1,092
48	43oE	4	29,026	15	1,035	7	(770)	7	1,092
52	43qE	4	27,940	14	966	7	(770)	7	1,092
56	44nE	3	28,176	14	966	7	(770)	7	1,092
58	44hE	3	27,186	14	966	7	(770)	7	1,092
64	47jE	2	24,707	13	897	7	(770)	7	1,092
66	47lE	2	25,378	13	897	7	(770)	7	1,092
70	49kE	2	24,707	13	897	7	(770)	7	1,092
72	50mE	1	22,726	12	828	7	(770)	7	1,092

Notes: 1. Costs in 1980 dollars for transportation and RTS at $2M reused; $32M expended.
2. Partial flights rounded up to next integer or to 7, whichever is higher.
3. Each platform serviced seven times.

( ) = *Lowest cost*

Table H-7. Servicing Flight Costs - Mode C' - Mission Set V (Mode S-1 Reusable OTV and RTS)

Item No.	Set No.	No. of Platforms	Total Servicing Mass for 16 Year Mission, kg	(q) 1 STG OTV Ground Mated		(p) 1 STG OTV Space Mated		(l) 2 STG OTV Space Mated	
				No. of Flights at 1169 kg per Flight	Cost at 39 $M per Flight, $M	No. of Flights at 2474 kg per Flight	Cost at 80 $M per Flight, $M	No. of Flights at 13,686 kg per Flight	Cost at 126 $M per Flight, $M
73	60bC'	34	38,068	33	1,287	16	1,280	3	(378)
75	62cC'	26	33,753	29	1,131	14	1,120	3	(378)
76	63dC'	20	30,996	27	1,053	13	1,040	3	(378)
77	64gC'	14	30,260	26	1,014	13	1,040	3	(378)
79	66lC'	7	27,154	24	936	11	880	2	(252)
82	69mC'	4	26,149	23	897	11	880	2	(252)
101	61pC'	33	43,144	37	1,443	18	1,440	4	(504)
126	65nC'	12	33,117	29	1,131	14	1,120	3	(378)
87	74aC'	145	95,852	82	3,198	39	3,120	7	(882)
91	78qC'	87	71,118	61	2,379	29	2,320	6	(756)
100	86rC'	47	51,082	44	1,716	21	1,680	4	(504)
104	88fC'	29	40,116	35	1,365	17	1,360	3	(378)
110	91eC'	24	37,070	32	1,248	15	1,200	3	(378)
111	92vC'	23	38,568	33	1,287	16	1,280	3	(378)
121	94oC'	17	36,167	31	1,209	15	1,200	3	(378)
129	96hC'	12	31,489	27	1,053	13	1,040	3	(378)
137	66jC'	7	25,520	22	858	11	880	2	(252)
142	99kC'	5	29,553	26	1,014	12	960	3	(378)

Notes: 1. Costs in 1980 dollars for transportation and RTS at $2M reused.
2. Partial flights rounded up to next integer.
3. Each platform serviced once.

( ) = Lowest cost

Table H-8. Servicing Flight Costs - Mode C' - Mission Set V (Mode S-2 OTV and RTS Expended)

Item No.	Set No.	No. of Platforms	Total Servicing Mass for 16 Year Mission, kg	(r) Centaur Ground Mated		(r') Centaur Ground Mated		(f) IOTV Ground Mated		(e) 1 STG OTV Ground Mated		(h) 1 STG OTV Space Mated		(m) 2 STG OTV Space Mated	
				No. of Flights at 3663 kg per Flight	Cost at 94 $M per Flight, $M	No. of Flights at 3663 kg per Flight	Cost at 82 $M per Flight, $M	No. of Flights at 4873 kg per Flight	Cost at 91 $M per Flight, $M	No. of Flights at 5629 kg per Flight	Cost at 99 $M per Flight, $M	No. of Flights at 9975 kg per Flight	Cost at 140 $M per Flight, $M	No. of Flights at per Flight	Cost at per Flight, $M
73	60bC'	34	38,068	11	1,034	11	902	8	728	7	693	4	560	2	(432)
75	62cC'	26	33,753	10	940	10	820	7	637	6	594	4	560	2	(432)
76	63dC'	20	30,996	9	846	9	738	7	637	6	594	4	560	2	(432)
77	64gC'	14	30,260	9	846	9	738	7	637	6	594	3	(420)	2	432
79	66lC'	7	27,154	8	752	8	656	6	546	5	495	3	(420)	2	432
82	69mC'	4	26,149	8	752	8	656	6	546	5	495	3	(420)	2	432
101	61pC'	33	43,144	12	1,128	12	984	9	819	8	792	5	700	2	(432)
126	65nC'	12	33,117	9	846	9	738	7	637	6	594	4	560	2	(432)
67	74aC'	145	95,852	27	2,538	27	2,214	20	1,820	17	1,683	10	1,400	5	(1,080)
91	78qC'	87	71,118	20	1,880	20	1,640	15	1,365	13	1,287	8	1,120	4	(864)
100	86rC'	47	51,082	14	1,316	14	1,148	11	1,001	9	891	6	840	3	(648)
104	88fC'	29	40,116	11	1,034	11	902	9	819	8	792	4	560	2	(432)
110	91eC'	24	37,070	11	1,034	11	902	8	728	7	693	4	560	2	(432)
111	92vC'	23	38,568	11	1,034	11	902	8	728	7	693	4	560	2	(432)
121	94oC'	17	36,167	10	940	10	820	8	728	7	693	4	560	2	(432)
129	96hC'	12	31,489	9	846	9	738	7	637	6	594	4	560	2	(432)
137	66iC'	7	25,520	7	658	7	574	6	546	5	495	3	(420)	2	(432)
142	9[illegible]kC'	5	29,553	8	752	8	656	6	546	6	594	3	(420)	2	(432)

Notes: 1. Costs in 1980 dollars for transportation and RTS at $32M expended.
2. Partial flight rounded up to next integer.
3. Each platform serviced once.

( ) = Lowest cost

Table H-9. Servicing Flight Costs - Mode C' - Mission Set V (Mode S-3 OTV Reusable/RTS Expended)

Item No.	Set No.	No. of Platforms	Total Servicing Mass for 16 Year Mission, kg	(q) OTV Reusable Ground Mated		(p) OTV Reusable Space Mated		(l) 2 STG OTV Reusable Space Mated	
				No. of Flights at 2038 kg per Flight	Cost at 69 $M per Flight, $M	No. of Flights at 4041 kg per Flight	Cost at 110 $M per Flight, $M	No. of Flights at 15,381 kg per Flight	Cost at 156 $M per Flight, $M
73	60bC'	34	38,068	19	1,311	10	1,100	3	(468)
75	62cC'	26	33,753	17	1,173	9	990	3	(458)
76	63dC'	20	30,996	16	1,104	8	880	2	(312)
77	64gC'	14	30,260	15	1,035	8	880	2	(312)
79	66lC'	7	27,154	14	966	7	770	2	(312)
82	69mC'	4	26,149	13	897	7	770	2	(312)
101	61pC'	33	43,144	22	1,518	11	1,210	3	(468)
126	65nC'	12	33,117	17	1,173	9	990	3	(468)
87	74aC'	145	95,852	47	3,243	24	2,640	7	(1,092)
91	78qC'	87	71,118	35	2,415	18	1,980	5	(780)
100	86rC'	47	51,082	25	1,725	13	1,430	4	(624)
104	88fC'	29	40,116	20	1,380	10	1,100	3	(468)
110	91eC'	24	37,070	19	1,311	10	1,100	3	(468)
111	92vC'	23	38,568	19	1,311	10	1,100	3	(468)
121	94oC'	17	36,167	18	1,242	9	990	3	(468)
129	96hC'	12	31,489	16	1,104	8	880	2	(312)
137	66jC'	7	25,520	13	897	7	770	2	(312)
142	99kC'	5	29,553	15	1,035	8	880	2	(312)

Notes: 1. Costs in 1980 dollars for transportation and RTS at $32M expended.
2. Partial flights rounded up to next integer.
3. Each platform serviced once.

( ) = Lowest cost

Table H-10. Servicing Flight Costs - Mode E - Mission Set V (Mode S-1 Reusable OTV and RTS)

Item No.	Set No.	No. of Platforms	Total Servicing Mass for 16 Year Mission, kg	(q) 1 STG OTV Ground Mated		(p) 1 STG OTV Space Mated		(l) 2 STG OTV Space Mated	
				No. of Flights at 1169 kg per Flight	Cost at 39 $M per Flight, $M	No. of Flights at 2474 kg per Flight	Cost at 80 $M per Flight, $M	No. of Flights at 13,686 kg per Flight	Cost at 126 $M per Flight, $M
84	70mE	3	73,703	63	2,457	30	2,400	7	(882)
106	62bE	26	99,197	85	3,315	40	3,200	8	(1,008)
114	63cE	20	92,400	79	3,081	38	3,040	7	(882)
144	100kE	4	87,502	75	2,925	36	2,880	7	(882)
141	68lE	6	87,649	75	2,925	36	2,880	7	(882)
89	76aE	95	211,700	181	7,059	86	6,880	16	(2,016)
95	81qE	62	169,087	145	5,655	69	5,520	13	(1,638)
103	87rE	30	118,599	102	3,978	48	3,840	9	(1,134)
107	90pE	25	107,736	93	3,627	44	3,520	8	(1,008)
115	63fE	20	100,606	86	3,354	41	3,280	8	(1,008)
119	94eE	17	104,809	90	3,510	43	3,440	8	(1,008)
122	95dE	16	98,069	84	3,276	40	3,200	8	(1,008)
123	95vE	16	103,957	89	3,471	42	3,360	8	(1,008)
127	65oE	12	93,370	80	3,120	38	3,040	7	(882)
130	96gE	12	94,550	81	3,159	39	3,120	7	(882)
134	98nE	9	89,603	77	3,003	37	2,960	7	(882)
136	98hE	9	86,822	75	2,925	35	2,800	7	(882)
140	68jE	6	86,732	75	2,925	35	2,800	7	(882)

Notes: 1. Costs in 1980 dollars for transportation and RTS at $2M reused.
2. Partial flights rounded up to next integer or to 7, whichever is higher.
3. Each platform serviced seven times.

( ) = Lowest cost

Table H-11. Servicing Flight Costs - Mode E - Mission Set V (Mode S-2 OTV and RTS Expended)

Item No.	Set No.	No. of Platforms	Total Servicing Mass for 16 Year Mission, kg	(r) Centaur Ground Mated		(r') Centaur Ground Mated		(f) IOTV Ground Mated		(e) 1 STG OTV Ground Mated		(n) 1 STG OTV Space Mated		(m) 2 STG OTV Space Mated	
				No. of Flights at 3663 kg per Flight	Cost at 94 $M per Flight, $M	No. of Flights at 3663 kg per Flight	Cost at 84 $M per Flight, $M	No. of Flights at 4873 kg per Flight	Cost at 91 $M per Flight, $M	No. of Flights at 5629 kg per Flight	Cost at 99 $M per Flight, $M	No. of Flights at 9975 kg per Flight	Cost at 140 $M per Flight, $M	No. of Flights at 22,336 kg per Flight	Cost at 216 $M per Flight, $M
84	70mE	3	73,703	21	1,974	21	1,722	16	1,456	13	1,287	8	(1,120)	7	1,512
106	62bE	26	99,197	27	2,538	27	2,214	21	1,911	18	1,782	10	(1,400)	7	1,512
114	63cE	20	92,400	26	2,444	26	2,132	19	1,729	17	1,683	10	(1,400)	7	1,512
144	100kE	4	87,502	24	2,256	24	1,968	18	1,638	16	1,584	8	(1,120)	7	1,512
141	68lE	6	87,649	24	2,256	24	1,968	18	1,638	16	1,584	9	(1,260)	7	1,512
89	76aE	95	211,700	58	5,452	58	4,756	44	4,004	38	3,762	22	3,080	10	(2,160)
95	81qE	62	169,087	47	4,418	47	3,854	35	3,185	30	2,970	17	2,380	8	(1,728)
103	87rE	30	118,599	33	3,102	33	2,706	25	2,275	21	2,079	12	1,680	7	(1,512)
107	90pE	25	107,736	30	2,820	30	2,460	23	2,093	20	1,980	11	1,540	7	(1,512)
115	63fE	20	100,606	28	2,632	28	2,296	21	1,911	18	1,782	10	(1,400)	7	1,512
119	94eE	17	104,809	29	2,726	29	2,378	22	2,002	19	1,881	11	1,540	7	(1,512)
122	95dE	16	98,069	27	2,538	27	2,214	21	1,911	18	1,782	10	(1,400)	7	1,512
123	95vE	16	103,957	29	2,726	29	2,378	22	2,002	19	1,881	11	1,540	7	(1,512)
127	65oE	12	93,370	26	2,444	26	2,132	20	1,820	17	1,683	10	(1,400)	7	1,512
130	96gE	12	94,550	26	2,444	26	2,132	20	1,820	17	1,683	10	(1,400)	7	1,512
134	98nE	9	89,603	25	2,350	25	2,050	19	1,729	16	1,584	9	(1,260)	7	1,512
136	99hE	9	86,822	24	2,256	24	1,968	18	1,638	16	1,584	9	(1,260)	7	1,512
140	68jE	6	86,732	24	2,256	24	1,968	18	1,638	16	1,584	9	(1,260)	7	1,512

Notes: 1. Costs in 1980 dollars for transportation and RTS at $32M expended.
2. Partial flight rounded up to next integer or to 7, whichever is higher
3. Each platform serviced seven times.

( ) = Lowest cost

Table H-12. Servicing Flight Costs - Mode E - Mission Set V (Mode S-3 OTV Reusable/RTS Expended)

Item No.	Set No.	No. of Platforms	Total Servicing Mass for 16 Year Mission, kg	(q) OTV Reusable Ground Mated		(p) OTV Reusable Space Mated		(l) 2 STG OTV Reusable Space Mated	
				No. of Flights at 2038 per Flight	Cost at 69 $M per Flight, $M	No. of Flights at 4041 kg per Flight	Cost at 110 $M per Flight, $M	No. of Flights at 15,381 kg per Flight	Cost at 156 $M per Flight, $M
84	70mE	3	73,703	37	2,553	19	2,090	7	(1,092)
106	62bE	26	99,197	49	3,381	25	2,750	7	(1,092)
114	63cE	20	92,400	46	3,174	23	2,530	7	(1,092)
144	100kE	4	87,502	43	2,967	22	2,460	6	(936)
141	68lE	6	87,649	43	2,967	22	2,460	6	(936)
89	76aE	95	211,700	104	7,176	53	5,830	14	(2,184)
95	81qE	62	169,087	83	5,727	42	4,620	11	(1,716)
103	87rE	30	118,599	59	4,071	30	3,300	8	(1,248)
107	90pE	25	107,736	53	3,657	27	2,970	7	(1,092)
115	63fE	20	100,606	50	3,450	25	2,750	7	(1,092)
119	94eE	17	104,809	52	3,588	26	2,860	7	(1,092)
122	95dE	16	98,069	49	3,381	25	2,750	7	(1,092)
123	95vE	16	103,957	51	3,519	26	2,860	7	(1,092)
127	65oE	12	93,370	46	3,174	24	2,640	7	(1,092)
130	96gE	12	94,550	47	3,243	24	2,640	7	(1,092)
134	98nE	9	89,603	44	3,036	23	2,530	7	(1,092)
136	98hE	9	86,822	43	2,967	22	2,420	7	(1,092)
140	68jE	6	86,732	43	2,967	22	2,420	7	(1,092)

Notes: 1. Costs in 1980 dollars for transportation and RTS at $32M expended.
2. Partial flights rounded up to next integer or to 7, whichever is higher.
3. Each platform serviced sevent imes.

( ) = Lowest cost

APPENDIX I

GEOSTATIONARY PLATFORM COST MODEL RUNS

APPENDIX I

GEOSTATIONARY PLATFORM COST MODEL RUNS

Platform bus development and production costs were estimated using Convair's computerized life cycle cost model. Table I-1 is a sample cost model input sheet for Items 122 and 123. Inputs to the model are the operational life, number of units produced, and subsystem descriptions developed using the platform synthesis model (Ref. Appendix G).

The cost model output data sheets for Items 1-144 are included in Tables I-2 and I-3. The costs are itemized as follows:

Column 1	Development costs
Column 2	Theoretical first unit costs
Column 3	Production costs for n units
Column 4	Total development and production costs

The cost model is discussed in detail in Volume III.

Table I-1. Sample Cost Model Input Sheet

```
CASE1D  ITEM-122 ,BUS TYPE-95DE $CASE-II
          TAPE2 300
          $SIZE
don't punch→ C PRI STR        SECONDARY      THERMAL CONT    ACS (AVIONICS)  ACS (AMCD)
          A00= 3314.    ,A01= 331.     ,A02= 216.     ,A03= 201.     ,A04= 242.   )
don't punch→ C
don't punch→ C RCS            SOLAR ARRAY    BATTERIES       POWER COND      TT&C
          A05= 235.     ,A06= 24.      ,A07= 20.      ,A08= 923.     ,A09= 299.   )
don't punch→ C
don't punch→ C RENDEV (AVI)   DOCK (MECH)    PROD UNITS      FACILITIES
          A10= 312.     ,A11= 882.     ,A12= 16.      ,A13= 16 404.  $
```

I-2

```
CASE1D  ITEM-123 ,BUS TYPE-95VE $CASE-III
          TAPE2 300
          $SIZE
don't punch→ C PRI STR        SECONDARY      THERMAL CONT    ACS (AVIONICS)  ACS (AMCD)
          A00= 5487.    ,A01= 331.     ,A02= 216.     ,A03= 225.     ,A04= 320.   )
don't punch→ C
don't punch→ C RCS            SOLAR ARRAY    BATTERIES       POWER COND      TT&C
          A05= 270.     ,A06= 24.      ,A07= 20.      ,A08= 924.     ,A09= 299.   )
don't punch→ C
don't punch→ C RENDEV (AVI)   DOCK (MECH)    PROD UNITS      FACILITIES
          A10= 312.     ,A11= 882.     ,A12= 16.      ,A13= 18 863.  $
```

Table I-2. Nominal Traffic Model Cost Runs

SYSTEM LIFE; UNITS PRODUCED 16.00 67.00

12.25.31. 01/21/80

ITEM 1 BUS TYPE 51AC CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	124.12	20.85	1023.31	1147.43
1.1.1. STRUCTURE	6.78	.72	35.28	
1.1.1.1. STRUCTURE (PRIMARY)	4.49	.02	30.45	
1.1.1.2. STRUCTURE (SECONDARY)	2.10	.10	4.83	
1.1.1.3. STRUCTURE (TOOLING)	.20			
1.1.2. THERMAL CONTROL	2.75	.39	19.31	
1.1.3. ATTITUDE CONTROL	29.13	3.20	156.98	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	29.23	2.04	99.99	
1.1.3.2. ATTITUDE CONTROL (AMCD)	.90	1.16	56.99	
1.1.4. REACTION CONTROL	18.19	3.67	180.21	
1.1.5. ELECTRICAL POWER	7.29	4.45	216.59	
1.1.5.1. SOLAR ARRAY	3.89	3.42	167.97	
1.1.5.2. BATTERIES	.36	.27	13.17	
1.1.5.3. POWER COND & DIST	3.03	.76	37.46	
1.1.6. TT&C	9.54	3.80	186.59	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		1.95	95.64	
1.1.9. PROGRAM MANAGEMENT	5.45	1.30	63.76	
1.1.10. SYSTEMS ENGRG & INTEGRATION	12.99	1.36	66.95	
1.1.11. SYSTEMS TEST ARTICLE	13.19			
1.1.12. SYSTEM TEST OPERATIONS	4.59			
1.1.13. GFE	7.37			
1.1.14. FSE				
1.1.15. FACILITIES	2.05			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 10.00 39.00

12.25.31. 01/21/80

ITEM 2 BUS TYPE 310C CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	135.50	25.33	753.34	888.85
1.1.1. STRUCTURE	7.93	1.17	34.61	
1.1.1.1. STRUCTURE (PRIMARY)	5.21	1.00	31.44	
1.1.1.2. STRUCTURE (SECONDARY)	2.33	.11	3.37	
1.1.1.3. STRUCTURE (TOOLING)	.39			
1.1.2. THERMAL CONTROL	2.77	.40	11.96	
1.1.3. ATTITUDE CONTROL	29.78	3.61	107.46	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	24.76	2.35	70.68	
1.1.3.2. ATTITUDE CONTROL (AMCO)	1.01	1.26	36.78	
1.1.4. REACTION CONTROL	19.16	4.65	138.17	
1.1.5. ELECTRICAL POWER	8.61	5.47	162.54	
1.1.5.1. SOLAR ARRAY	4.50	4.14	123.02	
1.1.5.2. BATTERIES	.37	.36	10.64	
1.1.5.3. POWER COND & DIST	3.74	.97	28.88	
1.1.6. TT&C	9.60	4.43	131.78	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)		-		
1.1.9. INTEGRATION, ASSEMBLY, & C/O		2.37	70.41	
1.1.10. PROGRAM MANAGEMENT	5.74	1.58	46.94	
1.1.10. SYSTEMS ENGRG & INTEGRATION	13.65	1.66	49.28	
1.1.11. SYSTEMS TEST ARTICLE	22.10			
1.1.12. SYSTEM TEST OPERATIONS	5.47			
1.1.13. GSE	7.11			
1.1.14. PSE				
1.1.15. FACILITIES	2.45			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE: UNITS PRODUCED 16.00 31.00

12.25.31. 01/21/80

ITEM 3 BUS TYPE 5240 CASE 11

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	470.80	28.47	696.58	867.38
1.1.1. STRUCTURE	7.52			
1.1.1.1. STRUCTURE (PRIMARY)	4.76	.40	21.62	
1.1.1.2. STRUCTURE (SECONDARY)	2.49	.76	18.67	
1.1.1.3. STRUCTURE (TOOLING)	.27	.12	2.46	
1.1.2. THERMAL CONTROL	2.78	.41	9.60	
1.1.3. ATTITUDE CONTROL	49.27			
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	48.34	3.28	73.96	
1.1.3.2. ATTITUDE CONTROL (AMCD)	.93	2.11	50.62	
1.1.4. REACTION CONTROL	46.26	1.16	28.34	
1.1.5. ELECTRICAL POWER	17.34	2.22	53.40	
1.1.5.1. SOLAR ARRAY	6.11	8.32	200.16	
1.1.5.2. BATTERIES	.33	6.17	148.31	
1.1.5.3. POWER COND & DIST	5.55	.63	15.05	
1.1.6. TT&C	9.95	1.53	36.80	
1.1.7. RENDEZVOUS & DOCKING	23.92	4.56	109.57	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.36	2.87	68.99	
1.1.7.2. DOCKING (MECHANICAL)	4.56	2.30	55.40	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		.57	13.59	
1.1.9. PROGRAM MANAGEMENT	7.52	2.71	65.10	
1.1.10. SYSTEMS ENGRG & INTEGRATION	17.79	1.81	43.40	
1.1.11. SYSTEMS TEST ARTICLE	25.27	1.90	45.57	
1.1.12. SYSTEM TEST OPERATIONS	6.25			
1.1.13. GSE	10.14			
1.1.14. PSE				
1.1.15. FACILITIES	2.17			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE: UNITS PRODUCED 16.00 26.00

12.25.31. 01/21/80

ITEM 4 BUS TYPE 32RC CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	ADTCE PHASE COST	FIRST UNIT COST	PROD PHASE COST	ADTCE PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	156.17	33.85	691.56	847.73
1.1.1. STRUCTURE	9.39	1.81	37.03	
1.1.1.1. STRUCTURE (PRIMARY)	5.91	1.67	34.13	
1.1.1.2. STRUCTURE (SECONDARY)	2.76	.14	2.91	
1.1.1.3. STRUCTURE (TOOLING)	.71			
1.1.2. THERMAL CONTROL	2.81	.42	8.57	
1.1.3. ATTITUDE CONTROL	30.86	4.42	90.23	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	29.66	3.06	62.54	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.19	1.35	27.68	
1.1.4. REACTION CONTROL	29.61	6.45	131.72	
1.1.5. ELECTRICAL POWER	11.99	8.31	169.71	
1.1.5.1. SOLAR ARRAY	6.11	6.17	126.02	
1.1.5.2. BATTERIES	.39	.63	12.79	
1.1.5.3. POWER COND & DIST	5.49	1.51	30.90	
1.1.6. TT&C	10.00	4.96	101.33	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		3.16	64.63	
1.1.9. PROGRAM MANAGEMENT	5.34	2.11	43.09	
1.1.10. SYSTEMS ENGRG & INTEGRATION	14.88	2.21	45.24	
1.1.11. SYSTEMS TEST ARTICLE	26.53			
1.1.12. SYSTEM TEST OPERATIONS	7.31			
1.1.13. GSE	4.57			
1.1.14. FSE				
1.1.15. FACILITIES	3.00			

Table I-2. Nominal Traffic Model Cost Runs. Contd

SYSTEM LIFE: UNITS PRODUCED 16.00 24.00

12.25.31. 01/21/80

ITEM 4 BUS TYPE 328C CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDTEE PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDTEE PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	155.17	33.05	691.56	847.73
1.1.1. STRUCTURE	9.39	1.81	37.03	
1.1.1.1. STRUCTURE (PRIMARY)	5.91	1.67	34.13	
1.1.1.2. STRUCTURE (SECONDARY)	2.76	.14	2.91	
1.1.1.3. STRUCTURE (TOOLING)	.71			
1.1.2. THERMAL CONTROL	2.01	.42	8.57	
1.1.3. ATTITUDE CONTROL	30.86	4.42	90.23	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	29.66	3.06	62.54	
1.1.3.2. ATTITUDE CONTROL (AMCO)	1.19	1.35	27.68	
1.1.4. REACTION CONTROL	20.61	6.45	131.72	
1.1.5. ELECTRICAL POWER	11.99	8.31	169.71	
1.1.5.1. SOLAR ARRAY	6.11	6.17	126.02	
1.1.5.2. BATTERIES	.39	.63	12.79	
1.1.5.3. POWER COND & DIST	5.49	1.51	30.90	
1.1.6. TT&C	10.00	4.96	101.33	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		3.16	64.63	
1.1.9. PROGRAM MANAGEMENT	6.34	2.11	43.09	
1.1.10. SYSTEMS ENGRG & INTEGRATION	14.69	2.21	45.24	
1.1.11. SYSTEMS TEST ARTICLE	25.53			
1.1.12. SYSTEM TEST OPERATIONS	7.31			
1.1.13. GSE	4.57			
1.1.14. PSE				
1.1.15. FACILITIES	3.00			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 16.00 15.00

12.25.31. 01/21/60

ITEM 5 BUS TYPE 334E CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1960$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	168.03	27.56	338.27	506.30
1.1.1. STRUCTURE	8.31	1.11	13.60	
1.1.1.1. STRUCTURE (PRIMARY)	5.06	.46	11.73	
1.1.1.2. STRUCTURE (SECONDARY)	2.90	.15	1.67	
1.1.1.3. STRUCTURE (TOOLING)	.35			
1.1.2. THERMAL CONTROL	2.74	.39	4.79	
1.1.3. ATTITUDE CONTROL	28.85	3.04	37.33	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	27.93	1.87	22.91	
1.1.3.2. ATTITUDE CONTROL (AMCD)	.92	1.17	14.42	
1.1.4. REACTION CONTROL	13.64	1.01	12.37	
1.1.5. ELECTRICAL POWER	12.16	8.36	102.64	
1.1.5.1. SOLAR ARRAY	6.11	6.17	75.72	
1.1.5.2. BATTERIES	.39	.03	7.68	
1.1.5.3. POWER COND & DIST	5.66	1.57	19.23	
1.1.6. TT&C	9.90	4.43	54.40	
1.1.7. RENDEZVOUS & DOCKING	25.24	3.12	30.34	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.40	2.34	28.66	
1.1.7.2. DOCKING (MECHANICAL)	5.84	.79	9.66	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		2.58	31.61	
1.1.9. PROGRAM MANAGEMENT	7.45	1.72	21.08	
1.1.10. SYSTEMS ENGRG & INTEGRATION	17.62	1.80	22.13	
1.1.11. SYSTEMS TEST ARTICLE	24.04			
1.1.12. SYSTEM TEST OPERATIONS	5.95			
1.1.13. GSE	10.77			
1.1.14. PSE				
1.1.15. FACILITIES	2.16			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 16.00 19.00

12.25.31. 01/21/80

ITEM 6 BUS TYPE 33KC CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	156.16	34.71	530.37	688.53
1.1.1. STRUCTURE	9.57	1.87	28.62	
1.1.1.1. STRUCTURE (PRIMARY)	5.97	1.72	26.34	
1.1.1.2. STRUCTURE (SECONDARY)	2.86	.15	2.28	
1.1.1.3. STRUCTURE (TOOLING)	.74			
1.1.2. THERMAL CONTROL	2.83	.43	6.54	
1.1.3. ATTITUDE CONTROL	31.00	4.53	69.25	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	29.79	3.16	48.29	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.22	1.37	20.96	
1.1.4. REACTION CONTROL	20.63	6.75	103.15	
1.1.5. ELECTRICAL POWER	12.00	8.34	127.00	
1.1.5.1. SOLAR ARRAY	6.11	6.17	94.25	
1.1.5.2. BATTERIES	.39	.63	9.57	
1.1.5.3. POWER COND & DIST	5.50	1.52	23.18	
1.1.6. TT&C	10.06	5.14	78.49	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		3.24	49.57	
1.1.9. PROGRAM MANAGEMENT	6.39	2.16	33.04	
1.1.10. SYSTEMS ENGRG & INTEGRATION	15.09	2.27	34.70	
1.1.11. SYSTEMS TEST ARTICLE	30.28			
1.1.12. SYSTEM TEST OPERATIONS	7.49			
1.1.13. GSE	3.63			
1.1.14. PSE				
1.1.15. FACILITIES	3.99			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 16.00 19.00

12.25.31. 01/21/80

ITEM 7 BUS TYPE 3300 CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	179.43	31.95	488.22	667.70
1.1.1. STRUCTURE	8.90	1.42	21.70	
1.1.1.1. STRUCTURE (PRIMARY)	5.47	1.27	19.35	
1.1.1.2. STRUCTURE (SECONDARY)	2.93	.15	2.35	
1.1.1.3. STRUCTURE (TOOLING)	.50			
1.1.2. THERMAL CONTROL	2.63	.43	6.54	
1.1.3. ATTITUDE CONTROL	29.98	3.75	57.37	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	28.93	2.49	38.11	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.05	1.26	19.26	
1.1.4. REACTION CONTROL	17.19	2.85	43.60	
1.1.5. ELECTRICAL POWER	12.17	4.37	127.62	
1.1.5.1. SOLAR ARRAY	6.11	3.17	94.25	
1.1.5.2. BATTERIES	.39	.63	9.57	
1.1.5.3. POWER COND & DIST	5.67	1.57	24.01	
1.1.6. TT&C	10.06	5.14	78.49	
1.1.7. RENDEZVOUS & DOCKING	24.03	2.93	44.71	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.42	2.35	35.94	
1.1.7.2. DOCKING (MECHANICAL)	4.61	.57	8.77	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		2.99	45.63	
1.1.9. PROGRAM MANAGEMENT	7.78	1.99	30.42	
1.1.10. SYSTEMS ENGRG & INTEGRATION	19.39	2.09	31.94	
1.1.11. SYSTEMS TEST ARTICLE	27.47			
1.1.12. SYSTEM TEST OPERATIONS	6.90			
1.1.13. GSE	10.52			
1.1.14. FSE				
1.1.15. FACILITIES	2.85			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 8.00 32.00

11 41.30. 01/21/80

ITEM 8 BUS TYPE 3448 CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	112.12	22.30	554.27	666.39
1.1.1. STRUCTURE	8.64	1.20	29.75	
1.1.1.1. STRUCTURE (PRIMARY)	5.18	1.04	25.68	
1.1.1.2. STRUCTURE (SECONDARY)	3.08	.16	4.07	
1.1.1.3. STRUCTURE (TOOLING)	.39			
1.1.2. THERMAL CONTROL	2.68	.37	9.07	
1.1.3. ATTITUDE CONTROL	22.76	2.58	63.78	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	22.03	1.51	37.34	
1.1.3.2. ATTITUDE CONTROL (AMCD)	.74	1.07	26.44	
1.1.4. REACTION CONTROL	13.01	2.02	49.99	
1.1.5. ELECTRICAL POWER	9.65	7.57	187.50	
1.1.5.1. SOLAR ARRAY	4.89	5.61	138.85	
1.1.5.2. BATTERIES	.31	.57	14.09	
1.1.5.3. POWER COND & DIST	4.45	1.40	34.56	
1.1.6. TTEC	7.74	3.75	92.94	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		2.10	51.96	
1.1.9. PROGRAM MANAGEMENT	4.77	1.40	34.64	
1.1.10. SYSTEMS ENGRG & INTEGRATION	10.25	1.40	34.64	
1.1.11. SYSTEMS TEST ARTICLE	19.59			
1.1.12. SYSTEM TEST OPERATIONS	4.41			
1.1.13. GSE	6.45			
1.1.14. PSE				
1.1.15. FACILITIES	2.17			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 16.00 16.00

12.25.31. 01/21/80

ITEM 9 BUS TYPE 3480 CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	194.24	33.17	432.23	586.47
1.1.1. STRUCTURE	5.67	1.21	13.72	
1.1.1.1. STRUCTURE (PRIMARY)	5.18	1.04	13.56	
1.1.1.2. STRUCTURE (SECONDARY)	3.10	.17	2.16	
1.1.1.3. STRUCTURE (TOOLING)	.39			
1.1.2. THERMAL CONTROL	2.35	.44	5.69	
1.1.3. ATTITUDE CONTROL	30.72	4.30	50.08	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	29.54	2.96	38 60	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.17	1.34	17.47	
1.1.4. REACTION CONTROL	20.44	6.21	60.91	
1.1.5. ELECTRICAL POWER	17.09	8.34	108.67	
1.1.5.1. SOLAR ARRAY	5.11	0.17	60.36	
1.1.5.2. BATTERIES	.39	.03	0.16	
1.1.5.3. POWER COND & DIST	5.59	1.54	20.12	
1.1.6. TT&C	10.13	5.34	69.57	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		3.10	40.40	
1.1.9. PROGRAM MANAGEMENT	6.29	2.07	26.93	
1.1.10. SYSTEMS ENGRG & INTEGRATION	14.95	2.17	28.28	
1.1.11. SYSTEMS TEST ARTICLE	25.93			
1.1.12. SYSTEM TEST OPERATIONS	7.15			
1.1.13. GSE	1.49			
1.1.14. FSE				
1.1.15. FACILITIES	3.64			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 16.00 15.00

12.25.31. 01/21/80

ITEM 10 BUS TYPE 34EC CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	161.63	36.12	470.70	632.33
1.1.1. STRUCTURE	10.00	2.02	26.31	
1.1.1.1. STRUCTURE (PRIMARY)	6.09	1.85	24.15	
1.1.1.2. STRUCTURE (SECONDARY)	3.10	.17	2.16	
1.1.1.3. STRUCTURE (TOOLING)	.81			
1.1.2. THERMAL CONTROL	2.85	.44	5.64	
1.1.3. ATTITUDE CONTROL	31.26	4.76	62.00	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	30.00	3.36	43.77	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.26	1.40	18.23	
1.1.4. REACTION CONTROL	21.15	7.24	94.29	
1.1.5. ELECTRICAL POWER	12.10	8.34	108.73	
1.1.5.1. SOLAR ARRAY	6.11	6.17	80.38	
1.1.5.2. BATTERIES	.39	.63	8.16	
1.1.5.3. POWER COND & DIST	5.60	1.55	20.18	
1.1.6. TT&C	10.13	5.34	69.57	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		3.38	43.99	
1.1.9. PROGRAM MANAGEMENT	6.47	2.25	29.33	
1.1.10. SYSTEMS ENGRG & INTEGRATION	15.30	2.36	30.74	
1.1.11. SYSTEMS TEST ARTICLE	31.51			
1.1.12. SYSTEM TEST OPERATIONS	7.50			
1.1.13. GSE	2.74			
1.1.14. PSE				
1.1.15. FACILITIES	4.31			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 16.00 15.00

12.25.31. 01/21/80

ITEM 11 BUS TYPE 55QE CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	175.05	30.10	369.49	544.54
1.1.1. STRUCTURE	9.12	1.48	18.21	
1.1.1.1. STRUCTURE (PRIMARY)	5.54	1.32	16.20	
1.1.1.2. STRUCTURE (SECONDARY)	3.06	.16	2.00	
1.1.1.3. STRUCTURE (TOOLING)	.53			
1.1.2. THERMAL CONTROL	3.77	.40	4.94	
1.1.3. ATTITUDE CONTROL	29.25	3.28	40.26	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	28.26	2.05	25.22	
1.1.3.2. ATTITUDE CONTROL (AMCD)	.99	1.23	15.04	
1.1.4. REACTION CONTROL	14.10	1.17	14.35	
1.1.5. ELECTRICAL POWER	12.79	9.06	111.16	
1.1.5.1. SOLAR ARRAY	6.60	6.02	83.69	
1.1.5.2. BATTERIES	.39	.63	7.66	
1.1.5.3. POWER COND & DIST	5.80	1.61	19.78	
1.1.6. TT&C	9.95	4.83	59.34	
1.1.7. RENDEZVOUS & DOCKING	25.63	3.22	39.50	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.44	2.37	29.07	
1.1.7.2. DOCKING (MECHANICAL)	6.19	.85	10.43	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		2.81	34.53	
1.1.9. PROGRAM MANAGEMENT	7.67	1.88	23.02	
1.1.10. SYSTEMS ENGRG & INTEGRATION	18.12	1.97	24.17	
1.1.11. SYSTEMS TEST ARTICLE	26.25			
1.1.12. SYSTEM TEST OPERATIONS	7.50			
1.1.13. GSE	10.36			
1.1.14. PSE				
1.1.15. FACILITIES	2.54			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 16.00 15.00

12.25.31. 01/21/80

ITEM 12 BUS TYPE 55VC CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE CUST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	169.76	39.63	486.55	656.31
1.1.1. STRUCTURE	11.07	2.60	32.92	
1.1.1.1. STRUCTURE (PRIMARY)	6.62	2.51	30.75	
1.1.1.2. STRUCTURE (SECONDARY)	3.24	.10	2.16	
1.1.1.3. STRUCTURE (TOOLING)	1.20			
1.1.2. THERMAL CONTROL	2.87	.44	5.42	
1.1.3. ATTITUDE CONTROL	31.88	5.33	65.38	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	30.52	3.87	47.65	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.37	1.46	17.93	
1.1.4. REACTION CONTROL	21.90	8.47	103.95	
1.1.5. ELECTRICAL POWER	12.16	8.36	102.64	
1.1.5.1. SOLAR ARRAY	6.11	6.17	75.72	
1.1.5.2. BATTERIES	.39	.63	7.66	
1.1.5.3. POWER COND & DIST	5.66	1.57	19.23	
1.1.6. TT&C	10.21	5.59	68.62	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		3.70	45.47	
1.1.9. PROGRAM MANAGEMENT	6.67	2.47	30.31	
1.1.10. SYSTEMS ENGRG & INTEGRATION	15.76	2.59	31.63	
1.1.11. SYSTEMS TEST ARTICLE	34.57			
1.1.12. SYSTEM TEST OPERATIONS	8.56			
1.1.13. GSE	9.01			
1.1.14. PSE				
1.1.15. FACILITIES	5.12			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 8.00 28.00

11.41.30. 01/21/80

ITEM 13 BUS TYPE 3509 CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	119.80	25.29	553.44	673.24
1.1.1. STRUCTURE	9.67	1.64	35.91	
1.1.1.1. STRUCTURE (PRIMARY)	5.69	1.45	31.83	
1.1.1.2. STRUCTURE (SECONDARY)	3.33	.19	4.08	
1.1.1.3. STRUCTURE (TOOLING)	.60			
1.1.2. THERMAL CONTROL	2.71	.36	8.29	
1.1.3. ATTITUDE CONTROL	23.18	2.84	62.12	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	22.37	1.71	37.46	
1.1.3.2. ATTITUDE CONTROL (AMCD)	.81	1.13	24.66	
1.1.4. REACTION CONTROL	13.56	2.43	53.16	
1.1.5. ELECTRICAL POWER	10.58	8.44	184.75	
1.1.5.1. SOLAR ARRAY	5.28	6.20	135.62	
1.1.5.2. BATTERIES	.31	.65	14.23	
1.1.5.3. POWER COND & DIST	5.00	1.60	34.90	
1.1.6. TTSC	7.84	4.03	88.14	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		2.37	51.88	
1.1.9. PROGRAM MANAGEMENT	5.00	1.58	34.59	
1.1.10. SYSTEMS ENGRG & INTEGRATION	10.74	1.58	34.59	
1.1.11. SYSTEMS TEST ARTICLE	22.13			
1.1.12. SYSTEM TEST OPERATIONS	4.98			
1.1.13. GSE	6.75			
1.1.14. FSE				
1.1.15. FACILITIES	2.66			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 16.00 14.00

12.25.31. 01/21/80

ITEM 14 BUS TYPE 35EC CASE 11

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	171.87	40.75	469.26	641.15
1.1.1. STRUCTURE	10.56	2.22	25.52	
1.1.1.1. STRUCTURE (PRIMARY)	6.24	2.03	23.36	
1.1.1.2. STRUCTURE (SECONDARY)	3.40	.19	2.16	
1.1.1.3. STRUCTURE (TOOLING)	.91			
1.1.2. THERMAL CONTROL	2.88	.45	5.19	
1.1.3. ATTITUDE CONTROL	31.73	5.18	59.66	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	30.39	3.73	43.01	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.34	1.45	16.65	
1.1.4. REACTION CONTROL	21.72	8.15	93.89	
1.1.5. ELECTRICAL POWER	13.75	6.94	114.52	
1.1.5.1. SOLAR ARRAY	7.05	7.46	85.87	
1.1.5.2. BATTERIES	.39	.72	8.24	
1.1.5.3. POWER COND & DIST	6.30	1.77	20.41	
1.1.6. TT&C	10.27	5.74	66.70	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		3.81	43.86	
1.1.9. PROGRAM MANAGEMENT	6.73	2.54	29.24	
1.1.10. SYSTEMS ENGRG & INTEGRATION	15.90	2.67	30.70	
1.1.11. SYSTEMS TEST ARTICLE	35.54			
1.1.12. SYSTEM TEST OPERATIONS	5.90			
1.1.13. GSE	7.09			
1.1.14. PSE				
1.1.15. FACILITIES	4.91			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 16.00 13.00

12.25.31. 01/21/60

ITEM 15 BUS TYPE 53CC CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1986$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	102.20	36.62	393.77	555.97
1.1.1. STRUCTURE	9.22	1.37	14.72	
1.1.1.1. STRUCTURE (PRIMARY)	5.37	1.18	12.70	
1.1.1.2. STRUCTURE (SECONDARY)	3.40	.19	2.02	
1.1.1.3. STRUCTURE (TOOLING)	.46			
1.1.2. THERMAL CONTROL	2.88	.45	4.84	
1.1.3. ATTITUDE CONTROL	31.15	4.66	50.14	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	29.91	3.28	35.23	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.25	1.39	14.91	
1.1.4. REACTION CONTROL	21.00	7.01	75.37	
1.1.5. ELECTRICAL POWER	13.03	9.24	99.34	
1.1.5.1. SOLAR ARRAY	6.60	6.82	73.31	
1.1.5.2. BATTERIES	.39	.72	7.69	
1.1.5.3. POWER COND & DIST	6.09	1.71	18.34	
1.1.6. TT&C	10.27	5.79	62.27	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		3.42	36.80	
1.1.9. PROGRAM MANAGEMENT	5.43	2.28	24.53	
1.1.10. SYSTEMS ENGRG & INTEGRATION	15.32	2.40	25.76	
1.1.11. SYSTEM TEST ARTICLE	31.94			
1.1.12. SYSTEM TEST OPERATIONS	7.91			
1.1.13. GSE	.76			
1.1.14. FSE				
1.1.15. FACILITIES	4.15			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 16.00 12.00

12.25.31. 01/21/80

ITEM 16 BUS TYPE 36RC* CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	R&D&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	R&D&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	195.79	36.43	383.71	579.50
1.1.1. STRUCTURE	40.58	2.14	21.36	
1.1.1.1. STRUCTURE (PRIMARY)	6.17	1.94	19.39	
1.1.1.2. STRUCTURE (SECONDARY)	3.55	.20	1.99	
1.1.1.3. STRUCTURE (TOOLING)	.46			
1.1.2. THERMAL CONTROL	2.96	.46	4.58	
1.1.3. ATTITUDE CONTROL	30.91	4.46	44.49	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	29.72	3.09	30.90	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.20	1.36	13.60	
1.1.4. REACTION CONTROL	18.29	3.77	37.64	
1.1.5. ELECTRICAL POWER	14.00	10.02	100.08	
1.1.5.1. SOLAR ARRAY	7.06	7.46	74.45	
1.1.5.2. BATTERIES	.39	.72	7.14	
1.1.5.3. POWER COND & DIST	6.54	1.85	18.49	
1.1.6. TT&C	10.35	6.04	60.34	
1.1.7. RENDEZVOUS & DOCKING	24.24	3.04	30.33	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.54	2.45	24.44	
1.1.7.2. DOCKING (MECHANICAL)	4.70	.59	5.88	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		3.59	35.86	
1.1.9. PROGRAM MANAGEMENT	8.23	2.39	23.91	
1.1.10. SYSTEMS ENGRG & INTEGRATION	19.66	2.51	25.10	
1.1.11. SYSTEMS TEST ARTICLE	33.52			
1.1.12. SYSTEM TEST OPERATIONS	8.30			
1.1.13. GSE	11.19			
1.1.14. PSE				
1.1.15. FACILITIES	3.28			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE: UNITS PRODUCED 16.00 9.00

12.25.31. 01/21/80

ITEM 17 BUS TYPE 37PC' CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDTEF PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	264.96	42.30	323.60	528.56
1.1.1. STRUCTURE	10.98	2.27	17.38	
1.1.1.1. STRUCTURE (PRIMARY)	6.27	2.05	15.72	
1.1.1.2. STRUCTURE (SECONDARY)	3.79	.22	1.66	
1.1.1.3. STRUCTURE (TOOLING)	.93			
1.1.2. THERMAL CONTROL	2.94	.47	3.63	
1.1.3. ATTITUDE CONTROL	31.24	4.74	36.25	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	29.98	3.34	25.56	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.26	1.40	10.68	
1.1.4. REACTION CONTROL	19.67	4.13	31.50	
1.1.5. ELECTRICAL POWER	16.04	11.83	90.50	
1.1.5.1. SOLAR ARRAY	7.95	8.71	66.60	
1.1.5.2. BATTERIES	.40	.89	6.84	
1.1.5.3. POWER COND & DIST	7.69	2.23	17.06	
1.1.6. TT&C	10.46	6.42	49.12	
1.1.7. RENDEZVOUS & DOCKING	24.32	3.08	23.57	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.59	2.49	19.03	
1.1.7.2. DOCKING (MECHANICAL)	4.73	.59	4.54	
1.1.9. INTEGRATION, ASSEMBLY, & C/O		3.95	30.24	
1.1.9. PROGRAM MANAGEMENT	8.48	2.64	20.16	
1.1.10. SYSTEMS ENGRG & INTEGRATION	20.05	2.77	21.17	
1.1.11. SYSTEMS TEST ARTICLE	36.90			
1.1.12. SYSTEM TEST OPERATIONS	5.13			
1.1.13. [illegible]	21.46			
1.1.14. [illegible]				
1.1.15. FACILITIES	4.28			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 16.00 10.00

12.25.31. 01/21/80

ITEM 18 BUS TYPE 54 RCS CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	198.07	34.84	335.96	534.04
1.1.1. STRUCTURE	9.82	1.55	13.06	
1.1.1.1. STRUCTURE (PRIMARY)	5.56	1.34	11.27	
1.1.1.2. STRUCTURE (SECONDARY)	3.72	.21	1.79	
1.1.1.3. STRUCTURE (TCOLING)	.53			
1.1.2. THERMAL CONTROL	2.33	.47	3.98	
1.1.3. ATTITUDE CONTROL	30.71	4.30	36.27	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	29.54	2.96	24.98	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.17	1.34	11.30	
1.1.4. REACTION CONTROL	19.05	3.55	29.65	
1.1.5. ELECTRICAL POWER	15.78	11.74	99.04	
1.1.5.1. SOLAR ARRAY	7.65	8.71	73.42	
1.1.5.2. BATTERIES	.40	.89	7.54	
1.1.5.3. POWER COND & DIST	7.43	2.14	18.07	
1.1.6. TT&C	17.44	6.35	53.51	
1.1.7. RENDEZVOUS & DOCKING	24.29	3.00	25.64	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.57	2.47	20.65	
1.1.7.2. DOCKING (MECHANICAL)	4.72	.59	4.99	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		3.72	31.40	
1.1.9. PROGRAM MANAGEMENT	5.29	2.45	20.93	
1.1.10. SYSTEMS ENGRG & INTEGRATION	19.59	2.61	21.98	
1.1.11. SYSTEMS TEST ARTICLE	34.75			
1.1.12. SYSTEM TEST OPERATION	.40			
1.1.13. GSE	11.20			
1.1.14. FSE				
1.1.15. FACILITIES	3.63			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 10.00 9.00

12.25.31. 01/21/80

ITEM 1y BUS TYPE 37DC CASE 11

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	177.32	43.36	331.66	508.98
1.1.1. STRUCTURE	9.93	1.58	12.11	
1.1.1.1. STRUCTURE (PRIMARY)	5.59	1.37	10.45	
1.1.1.2. STRUCTURE (SECONDARY)	3.79	.22	1.66	
1.1.1.3. STRUCTURE (TOOLING)	.55			
1.1.2. THERMAL CONTROL	2.94	.47	3.63	
1.1.3. ATTITUDE CONTROL	31.79	5.24	40.05	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	30.44	3.78	26.94	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.35	1.45	11.11	
1.1.4. REACTION CONTROL	21.79	8.20	63.33	
1.1.5. ELECTRICAL POWER	15.87	11.77	90.06	
1.1.5.1. SOLAR ARRAY	7.95	8.71	66.60	
1.1.5.2. BATTERIES	.40	.89	6.84	
1.1.5.3. POWER COND.& DIST	7.52	2.17	16.63	
1.1.6. TT&C	10.46	6.42	49.12	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		4.05	31.00	
1.1.9. PROGRAM MANAGEMENT	6.87	2.70	20.66	
1.1.10. SYSTEMS ENGRG & INTEGRATION	16.23	2.84	21.70	
1.1.11. SYSTEMS TEST ARTICLE	37.82			
1.1.12. SYSTEM TEST OPERATIONS	9.36			
1.1.13. GSE	9.28			
1.1.14. FSF				
1.1.15. FACILITIES	4.09			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 16.00 9.00

12.25.31. 01/21/80

ITEM 20 BUS TYPE 3900 CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	189.29	46.24	369.04	557.33
1.1.1. STRUCTURE	11.64	2.64	20.18	
1.1.1.1. STRUCTURE (PRIMARY)	6.55	2.41	18.42	
1.1.1.2. STRUCTURE (SECONDARY)	3.95	.23	1.75	
1.1.1.3. STRUCTURE (TOOLING)	1.14			
1.1.2. THERMAL CONTROL	2.96	.46	3.70	
1.1.3. ATTITUDE CONTROL	32.55	6.01	45.96	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	31.07	4.48	34.27	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.48	1.53	11.69	
1.1.4. REACTION CONTROL	22.72	6.97	76.30	
1.1.5. ELECTRICAL POWER	15.71	11.72	69.66	
1.1.5.1. SOLAR ARRAY	7.95	8.71	66.80	
1.1.5.2. BATTERIES	.40	.89	6.84	
1.1.5.3. POWER COND & DIST	7.36	2.12	16.22	
1.1.6. TT&C	10.55	6.75	51.62	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		4.51	34.49	
1.1.9. PROGRAM MANAGEMENT	7.11	3.01	22.99	
1.1.10. SYSTEMS ENGRG & INTEGRATION	16.91	3.16	24.14	
1.1.11. SYSTEMS TEST ARTICLE	42.03			
1.1.12. SYSTEM TEST OPERATIONS	13.42			
1.1.13. GSE	4.61			
1.1.14. PSE				
1.1.15. FACILITIES	5.12			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 16.00 9.00

12.25.31. 01/21/80

ITEM 21 BUS TYPE 3385 CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1960$M)

	RDTE&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDTSE PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	145.90	37.73	288.65	434.55
1.1.1. STRUCTURE	11.17	2.32	17.73	
1.1.1.1. STRUCTURE (PRIMARY)	6.33	2.09	15.99	
1.1.1.2. STRUCTURE (SECONDARY)	3.92	.23	1.74	
1.1.1.3. STRUCTURE (TOOLING)	.95			
1.1.2. THERMAL CONTROL	2.97	.44	3.36	
1.1.3. ATTITUDE CONTROL	30.24	3.93	30.09	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	29.07	2.60	19.85	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.17	1.34	10.23	
1.1.4. REACTION CONTROL	15.15	1.62	12.37	
1.1.5. ELECTRICAL POWER	15.94	11.77	90.00	
1.1.5.1. SOLAR ARRAY	7.95	8.71	66.60	
1.1.5.2. BATTERIES	.40	.89	6.84	
1.1.5.3. POWER COND & DIST	7.49	2.16	16.56	
1.1.6. TT&C	10.29	5.84	44.69	
1.1.7. RENDEZVOUS & DOCKING	26.56	3.47	26.55	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.57	2.47	18.91	
1.1.7.2. DOCKING (MECHANICAL)	6.99	1.00	7.64	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		3.53	26.98	
1.1.9. PROGRAM MANAGEMENT	8.30	2.35	17.98	
1.1.10. SYSTEMS ENGRG & INTEGRATION	19.61	2.47	18.86	
1.1.11. SYSTEMS TEST ARTICLE	32.91			
1.1.12. SYSTEM TEST OPERATIONS	8.15			
1.1.13. GSE	11.21			
1.1.14. PSE				
1.1.15. FACILITIES	3.61			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 16.00 9.70

12.25.31. 01/21/80

ITEM 22 BUS TYPE 38FC* CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	207.85	43.46	332.46	540.31
1.1.1. STRUCTURE	11.31	2.40	18.38	
1.1.1.1. STRUCTURE (PRIMARY)	6.36	2.17	10.62	
1.1.1.2. STRUCTURE (SECONDARY)	3.95	.23	1.75	
1.1.1.3. STRUCTURE (TCOLING)	1.00			
1.1.2. THERMAL CONTROL	2.96	.48	3.70	
1.1.3. ATTITUDE CONTROL	31.41	4.89	37.36	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	30.12	3.47	26.57	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.29	1.41	10.82	
1.1.4. REACTION CONTROL	18.56	4.33	33.08	
1.1.5. ELECTRICAL POWER	14.22	11.89	90.97	
1.1.5.1. SOLAR ARRAY	7.95	8.71	66.60	
1.1.5.2. BATTERIES	.40	.89	6.84	
1.1.5.3. POWER COND & DIST	7.87	2.29	17.53	
1.1.6. TT&C	10.55	6.75	51.62	
1.1.7. RENDEZVOUS & DOCKING	24.38	3.11	23.80	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.62	2.51	19.22	
1.1.7.2. DOCKING (MECHANICAL)	4.76	.60	4.58	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		4.06	31.07	
1.1.9. PROGRAM MANAGEMENT	8.56	2.71	20.71	
1.1.10. SYSTEMS ENGRG & INTEGRATION	20.23	2.84	21.75	
1.1.11. SYSTEMS TEST ARTICLE	37.41			
1.1.12. SYSTEM TEST OPERATIONS	9.38			
1.1.13. GSE	11.57			
1.1.14. PSE				
1.1.15. FACILITIES	4.50			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 8.00 10.00

11.41.30. 01/21/80

ITEM 23 BUS TYPE 38R9 CASE 11

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	132.94	30.65	445.47	578.41
1.1.1. STRUCTURE	11.19	2.32	33.76	
1.1.1.1. STRUCTURE (PRIMARY)	6.30	2.09	30.44	
1.1.1.2. STRUCTURE (SECONDARY)	3.94	.23	3.32	
1.1.1.3. STRUCTURE (TOOLING)	.95			
1.1.2. THERMAL CONTROL	2.78	.41	5.92	
1.1.3. ATTITUDE CONTROL	23.96	3.31	46.10	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	22.93	2.10	30.51	
1.1.3.2. ATTITUDE CONTROL (AMCD)	.93	1.21	17.60	
1.1.4. REACTION CONTROL	14.38	3.16	45.99	
1.1.5. ELECTRICAL POWER	12.17	10.07	146.38	
1.1.5.1. SOLAR ARRAY	6.01	7.35	106.63	
1.1.5.2. BATTERIES	.32	.61	11.02	
1.1.5.3. POWER COND & DIST	5.84	1.91	27.73	
1.1.6. TT&C	8.05	4.67	67.87	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)		-		
1.1.8. INTEGRATION, ASSEMBLY, & C/O		2.87	41.76	
1.1.9. PROGRAM MANAGEMENT	5.36	1.92	27.84	
1.1.10. SYSTEMS ENGRG & INTEGRATION	11.51	1.92	27.84	
1.1.11. SYSTEMS TEST ARTICLE	26.92			
1.1.12. SYSTEM TEST OPERATIONS	6.03			
1.1.13. GSE	7.24			
1.1.14. PSE				
1.1.15. FACILITIES	3.55			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 16.00 8.00

12.25.31. 01/21/80

ITEM 24 BUS TYPE 3900 CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	212.49	45.93	315.05	527.54
1.1.1. STRUCTURE	10.55	1.76	12.19	
1.1.1.1. STRUCTURE (PRIMARY)	5.77	1.53	10.51	
1.1.1.2. STRUCTURE (SECONDARY)	4.14	.24	1.67	
1.1.1.3. STRUCTURE (TOOLING)	.64			
1.1.2. THERMAL CONTROL	2.99	.50	3.40	
1.1.3. ATTITUDE CONTROL	31.35	4.83	33.14	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	30.07	3.42	23.49	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.28	1.41	9.65	
1.1.4. REACTION CONTROL	25.78	4.24	29.11	
1.1.5. ELECTRICAL POWER	18.46	14.23	97.58	
1.1.5.1. SOLAR ARRAY	9.19	10.52	72.19	
1.1.5.2. BATTERIES	.40	1.07	7.36	
1.1.5.3. POWER COND & DIST	8.87	2.63	18.03	
1.1.6. TT&C	10.63	7.05	48.36	
1.1.7. RENDEZVOUS & DOCKING	24.45	3.15	21.59	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.66	2.54	17.45	
1.1.7.2. DOCKING (MECHANICAL)	4.79	.60	4.14	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		4.29	29.44	
1.1.9. PROGRAM MANAGEMENT	8.67	2.86	19.63	
1.1.10. SYSTEMS ENGRG & INTEGRATION	20.50	3.00	20.61	
1.1.11. SYSTEMS TEST ARTICLE	40.07			
1.1.12. SYSTEM TEST OPERATIONS	9.92			
1.1.13. GSE	11.72			
1.1.14. PSE				
1.1.15. FACILITIES	4.41			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 16.00 8.00

12.25.31. 01/21/80

ITEM 25 BUS TYPE 398E CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	201.79	40.52	277.92	479.71
1.1.1. STRUCTURE	10.50	1.76	12.07	
1.1.1.1. STRUCTURE (PRIMARY)	5.76	1.52	10.41	
1.1.1.2. STRUCTURE (SECONDARY)	4.11	.24	1.66	
1.1.1.3. STRUCTURE (TOOLING)	.63			
1.1.2. THERMAL CONTROL	2.83	.45	3.09	
1.1.3. ATTITUDE CONTROL	30.21	3.91	26.62	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	29.05	2.58	17.66	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.16	1.33	9.13	
1.1.4. REACTION CONTROL	15.10	1.59	10.91	
1.1.5. ELECTRICAL POWER	18.44	14.22	97.52	
1.1.5.1. SOLAR ARRAY	9.19	10.52	72.14	
1.1.5.2. BATTERIES	.40	1.07	7.36	
1.1.5.3. POWER COND & DIST	8.84	2.62	17.97	
1.1.6. TT&C	15.34	6.09	41.80	
1.1.7. RENDEZVOUS & DOCKING	26.79	3.53	24.24	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.60	2.50	17.12	
1.1.7.2. DOCKING (MECHANICAL)	7.19	1.04	7.12	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		3.79	25.97	
1.1.9. PROGRAM MANAGEMENT	9.46	2.52	17.32	
1.1.10. SYSTEMS ENGRG & INTEGRATION	19.99	2.65	18.16	
1.1.11. SYSTEMS TEST ARTICLE	35.34			
1.1.12. SYSTEM TEST OPERATIONS	9.75			
1.1.13. GSE	11.43			
1.1.14. PSE				
1.1.15. FACILITIES	3.54			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 16.00 8.00

12.25.31. 01/21/80

ITEM 26 BUS TYPE 39PE CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	205.71	41.83	286.94	492.65
1.1.1. STRUCTURE	11.48	2.42	16.61	
1.1.1.1. STRUCTURE (PRIMARY)	6.37	2.18	14.95	
1.1.1.2. STRUCTURE (SECONDARY)	4.11	.24	1.66	
1.1.1.3. STRUCTURE (TOOLING)	1.00			
1.1.2. THERMAL CONTROL	2.88	.45	3.09	
1.1.3. ATTITUDE CONTROL	30.50	4.13	28.30	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	29.30	2.76	18.95	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.21	1.36	9.36	
1.1.4. REACTION CONTROL	15.40	1.74	11.91	
1.1.5. ELECTRICAL POWER	18.44	14.22	97.52	
1.1.5.1. SOLAR ARRAY	9.19	10.52	72.19	
1.1.5.2. BATTERIES	.40	1.07	7.36	
1.1.5.3. POWER COND & DIST	8.84	2.62	17.97	
1.1.6. TTEC	10.36	6.09	41.80	
1.1.7. RENDEZVOUS & DOCKING	26.79	3.53	24.24	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.60	2.50	17.12	
1.1.7.2. DOCKING (MECHANICAL)	7.19	1.04	7.12	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		3.91	26.82	
1.1.9. PROGRAM MANAGEMENT	4.57	2.61	17.88	
1.1.10. SYSTEMS ENGRG & INTEGRATION	20.26	2.74	18.77	
1.1.11. SYSTEMS TEST ARTICLE	35.49			
1.1.12. SYSTEM TEST OPERATIONS	9.03			
1.1.13. GSE	11.59			
1.1.14. FSE				
1.1.15. FACILITIES	3.90			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 8.00 14.00

11.41.30. 01/21/80

ITEM 27 BUS TYPE 5699 CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	136.89	32.62	375.62	512.51
1.1.1. STRUCTURE	10.65	1.61	20.88	
1.1.1.1. STRUCTURE (PRIMARY)	5.81	1.56	18.02	
1.1.1.2. STRUCTURE (SECONDARY)	4.19	.25	2.06	
1.1.1.3. STRUCTURE (TOOLING)	.65			
1.1.2. THERMAL CONTROL	2.81	.42	4.83	
1.1.3. ATTITUDE CONTROL	23.33	3.29	37.92	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	22.91	2.08	24.00	
1.1.3.2. ATTITUDE CONTROL (AMCD)	.42	1.21	13.93	
1.1.4. REACTION CONTROL	14.36	3.14	36.22	
1.1.5. ELECTRICAL POWER	14.02	11.80	135.87	
1.1.5.1. SOLAR ARRAY	6.70	8.47	97.57	
1.1.5.2. BATTERIES	.32	.98	11.24	
1.1.5.3. POWER COND & DIST	6.99	2.35	27.07	
1.1.6. TTSC	6.15	5.01	57.73	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		3.06	35.21	
1.1.9. PROGRAM MANAGEMENT	5.46	2.04	23.48	
1.1.10. SYSTEMS ENGRG & INTEGRATION	11.74	2.04	23.48	
1.1.11. SYSTEMS TEST ARTICLE	28.54			
1.1.12. SYSTEM TEST OPERATIONS	6.42			
1.1.13. GSE	7.36			
1.1.14. PSE				
1.1.15. FACILITIES	3.53			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 8.00 14.00

11.41.30. 01/21/80

ITEM 28 BUS TYPE 56PB CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1960$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	141.13	34.18	393.64	534.77
1.1.1. STRUCTURE	11.62	2.47	28.41	
1.1.1.1. STRUCTURE (PRIMARY)	6.40	2.22	25.55	
1.1.1.2. STRUCTURE (SECONDARY)	4.19	.25	2.86	
1.1.1.3. STRUCTURE (TOOLING)	1.03			
1.1.2. THERMAL CONTROL	2.91	.42	4.83	
1.1.3. ATTITUDE CONTROL	24.12	3.51	40.45	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	23.15	2.27	26.12	
1.1.3.2. ATTITUDE CONTROL (AMCD)	.97	1.24	14.34	
1.1.4. REACTION CONTROL	14.69	3.49	40.19	
1.1.5. ELECTRICAL POWER	14.03	11.80	135.92	
1.1.5.1. SOLAR ARRAY	6.70	8.47	97.57	
1.1.5.2. BATTERIES	.32	.98	11.24	
1.1.5.3. POWER COND & DIST	7.00	2.35	27.11	
1.1.6. TT&C	8.15	5.01	57.73	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		3.20	36.90	
1.1.9. PROGRAM MANAGEMENT	5.58	2.14	24.60	
1.1.10. SYSTEMS ENGRG & INTEGRATION	11.99	2.14	24.60	
1.1.11. SYSTEMS TEST ARTICLE	29.91			
1.1.12. SYSTEM TEST OPERATIONS	6.73			
1.1.13. GSE	7.54			
1.1.14. PSE				
1.1.15. FACILITIES	3.95			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 10.00 7.00

12.25.31. 01/21/80

ITEM 29 BUS TYPE 56EC' CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	218.28	48.13	291.76	510.04
1.1.1. STRUCTURE	11.92	2.59	15.70	
1.1.1.1. STRUCTURE (PRIMARY)	6.50	2.34	14.18	
1.1.1.2. STRUCTURE (SECONDARY)	4.22	.25	1.52	
1.1.1.3. STRUCTURE (TOOLING)	1.10			
1.1.2. THERMAL CONTROL	2.99	.50	3.02	
1.1.3. ATTITUDE CONTROL	31.49	9.14	31.18	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	30.36	3.70	22.44	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.34	1.44	8.74	
1.1.4. REACTION CONTROL	19.17	4.65	28.20	
1.1.5. ELECTRICAL POWER	13.55	14.20	86.41	
1.1.5.1. SOLAR ARRAY	9.19	10.52	63.79	
1.1.5.2. BATTERIES	.40	1.07	6.90	
1.1.5.3. POWER COND & DIST	2.96	2.66	16.11	
1.1.6. TT&C	10.66	7.18	43.50	
1.1.7. RENDEZVOUS & DOCKING	24.49	3.17	19.20	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.67	2.56	15.52	
1.1.7.2. DOCKING (MECHANICAL)	4.82	.61	3.69	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		4.50	27.27	
1.1.9. PROGRAM MANAGEMENT	8.93	3.00	18.16	
1.1.10. SYSTEMS ENGRG & INTEGRATION	20.93	3.15	19.09	
1.1.11. SYSTEMS TEST ARTICLE	41.99			
1.1.12. SYSTEM TEST OPERATIONS	10.39			
1.1.13. GSE	11.94			
1.1.14. PSE				
1.1.15. FACILITIES	4.97			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE: UNITS PRODUCED 16.00 7.00

12.25.31. 01/21/80

ITEM 30 BUS TYPE 56VC* CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	221.67	49.46	299.81	521.49
1.1.1. STRUCTURE	12.48	3.09	18.70	
1.1.1.1. STRUCTURE (PRIMARY)	5.55	2.03	17.16	
1.1.1.2. STRUCTURE (SECONDARY)	4.72	.25	1.52	
1.1.1.3. STRUCTURE (TOOLING)	1.41			
1.1.2. THERMAL CONTROL	2.34	.50	3.02	
1.1.3. ATTITUDE CONTROL	31.91	5.37	32.56	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	30.58	3.93	23.62	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.34	1.44	8.74	
1.1.4. REACTION CONTROL	19.45	4.96	30.07	
1.1.5. ELECTRICAL POWER	10.54	14.26	86.44	
1.1.5.1. SOLAR ARRAY	9.19	10.52	63.79	
1.1.5.2. BATTERIES	.40	1.07	6.50	
1.1.5.3. POWER COND & DIST	8.97	2.66	16.14	
1.1.6. TT&C	10.56	7.18	43.50	
1.1.7. RENDEZVOUS & DOCKING	24.49	3.17	19.20	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.67	2.56	15.52	
1.1.7.2. DOCKING (MECHANICAL)	4.82	.61	3.69	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		4.62	28.02	
1.1.9. PROGRAM MANAGEMENT	9.92	3.00	18.68	
1.1.10. SYSTEMS ENGRG & INTEGRATION	21.93	3.24	19.61	
1.1.11. SYSTEMS TEST ARTICLE	43.15			
1.1.12. SYSTEM TEST OPERATIONS	10.59			
1.1.13. GSE	12.05			
1.1.14. PSE				
1.1.15. FACILITIES	5.24			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 16.00 7.00

12.25.31. 01/21/80

ITEM 31 BUS TYPE 56GC CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	140.91	49.52	300.14	441.06
1.1.1. STRUCTURE	10.70	1.02	11.06	
1.1.1.1. STRUCTURE (PRIMARY)	5.42	1.57	9.54	
1.1.1.2. STRUCTURE (SECONDARY)	4.22	.25	1.52	
1.1.1.3. STRUCTURE (TOOLING)	.66			
1.1.2. THERMAL CONTROL	2.99	.50	3.02	
1.1.3. ATTITUDE CONTROL	32.29	5.79	35.11	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	30.96	4.35	26.37	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.34	1.44	8.74	
1.1.4. REACTION CONTROL	22.55	9.67	58.60	
1.1.5. ELECTRICAL POWER	10.30	13.61	82.47	
1.1.5.1. SOLAR ARRAY	9.79	9.93	60.16	
1.1.5.2. BATTERIES	.40	1.07	6.50	
1.1.5.3. POWER COND & DIST	0.80	2.61	15.80	
1.1.6. TT&C	10.66	7.16	43.50	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		4.63	28.05	
1.1.9. PROGRAM MANAGEMENT	7.19	3.09	18.70	
1.1.10. SYSTEMS ENGRG & INTEGRATION	17.00	3.24	19.64	
1.1.11. SYSTEMS TEST ARTICLE	43.19			
1.1.12. SYSTEM TEST OPERATIONS	10.69			
1.1.13. GSE	9.72			
1.1.14. PSE				
1.1.15. FACILITIES	5.92			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE: UNITS PRODUCED 10.00 6.00

12.25.31. 01/21/80

ITEM 32 BUS TYPE 40HC CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	211.60	59.13	310.71	522.30
1.1.1. STRUCTURE	17.97	3.13	16.46	
1.1.1.1. STRUCTURE (PRIMARY)	6.86	2.84	14.94	
1.1.1.2. STRUCTURE (SECONDARY)	4.70	.29	1.52	
1.1.1.3. STRUCTURE (TOOLING)	1.41			
1.1.2. THERMAL CONTROL	3.07	.53	2.81	
1.1.3. ATTITUDE CONTROL	33.56	7.21	37.88	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	31.91	5.58	29.32	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.67	1.63	8.56	
1.1.4. REACTION CONTROL	23.92	12.58	66.09	
1.1.5. ELECTRICAL POWER	17.69	14.46	76.00	
1.1.5.1. SOLAR ARRAY	9.19	10.52	55.31	
1.1.5.2. BATTERIES	.41	1.16	6.11	
1.1.5.3. POWER COND & DIST	9.29	2.77	14.58	
1.1.6. TT&C	10.39	8.13	42.74	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		5.53	29.04	
1.1.9. PROGRAM MANAGEMENT	7.65	3.65	19.36	
1.1.10. SYSTEMS ENGRG & INTEGRATION	19.37	3.87	20.33	
1.1.11. SYSTEMS TEST ARTICLE	51.57			
1.1.12. SYSTEM TEST OPERATIONS	12.76			
1.1.13. GFE	10.33			
1.1.14. FSE				
1.1.15. FACILITIES	7.49			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE: UNITS PRODUCED 10.00 5.00

12.25.31. 01/21/80

ITEM 33 BUS TYPE 40CE CASE 11

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	212.69	44.05	234.64	447.33
1.1.1. STRUCTURE	11.49	2.09	10.98	
1.1.1.1. STRUCTURE (PRIMARY)	6.04	1.50	9.46	
1.1.1.2. STRUCTURE (SECONDARY)	4.66	.29	1.50	
1.1.1.3. STRUCTURE (TOOLING)	.79			
1.1.2. THERMAL CONTROL	2.47	.49	2.56	
1.1.3. ATTITUDE CONTROL	30.79	4.34	22.80	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	27.52	2.95	15.48	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.25	1.39	7.32	
1.1.4. REACTION CONTROL	15.65	1.87	9.83	
1.1.5. ELECTRICAL POWER	19.39	15.09	79.29	
1.1.5.1. SOLAR ARRAY	9.59	11.12	58.43	
1.1.5.2. BATTERIES	.41	1.16	6.11	
1.1.5.3. POWER COND & DIST	9.39	2.81	14.76	
1.1.6. TT&C	10.65	7.13	37.45	
1.1.7. RENDEZVOUS & DOCKING	27.60	3.77	19.82	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.72	2.60	13.66	
1.1.7.2. DOCKING (MECHANICAL)	7.88	1.17	6.16	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		4.17	21.93	
1.1.9. PROGRAM MANAGEMENT	8.77	2.78	14.62	
1.1.10. SYSTEMS ENGRG & INTEGRATION	20.73	2.92	15.35	
1.1.11. SYSTEMS TEST ARTICLE	38.95			
1.1.12. SYSTEM TEST OPERATIONS	9.64			
1.1.13. GSE	11.65			
1.1.14. PSE				
1.1.15. FACILITIES	4.23			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 16.00 6.00

ITEM 34 BUS TYPE 400C, CASE II 12.25.31. 01/21/80

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	223.48	50.66	260.23	489.72
1.1.1. STRUCTURE				
1.1.1.1. STRUCTURE (PRIMARY)	11.55	2.11	11.09	
1.1.1.2. STRUCTURE (SECONDARY)	8.06	1.82	9.57	
1.1.1.3. STRUCTURE (TOOLING)	4.70	.29	1.52	
1.1.2. THERMAL CONTROL	.80			
1.1.3. ATTITUDE CONTROL	3.07	.53	2.81	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	31.93	5.32	27.97	
1.1.3.2. ATTITUDE CONTROL (AMCD)	30.58	3.93	20.65	
1.1.4. REACTION CONTROL	1.25	1.39	7.32	
1.1.5. ELECTRICAL POWER	19.46	4.97	26.14	
1.1.5.1. SOLAR ARRAY	19.42	15.10	79.36	
1.1.5.2. BATTERIES	9.59	11.12	58.43	
1.1.5.3. POWER COND & DIST	.41	.16	6.11	
1.1.6. TT&C	9.43	2.62	14.03	
1.1.7. RENDEZVOUS & DOCKING	40.89	8.13	42.74	
1.1.7.1. RENDEZVOUS (AVIONICS)	24.69	3.26	17.23	
1.1.7.2. DOCKING (MECHANICAL)	19.79	2.66	13.95	
1.1.8. INTEGRATION, ASSEMBLY, & C/O	4.91	.02	3.28	
1.1.9. PROGRAM MANAGEMENT		4.73	24.68	
1.1.10. SYSTEMS ENGRG & INTEGRATION	8.95	3.16	16.54	
1.1.11. SYSTEMS TEST ARTICLE	21.15	3.31	17.42	
1.1.12. SYSTEM TEST OPERATIONS	44.19			
1.1.13. GSE	13.44			
1.1.14. PSE	12.39			
1.1.15. FACILITIES	5.25			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 16.00 6.00

12.25.31. 01/21/80

ITEM 35 BUS TYPE 40FE CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	216.58	46.00	241.71	458.29
1.1.1. STRUCTURE	12.64	2.76	14.49	
1.1.1.1. STRUCTURE (PRIMARY)	5.60	2.47	12.97	
1.1.1.2. STRUCTURE (SECONDARY)	4.66	.29	1.50	
1.1.1.3. STRUCTURE (TOOLING)	1.14			
1.1.2. THERMAL CONTROL	2.97	.49	2.56	
1.1.3. ATTITUDE CONTROL	31.04	4.57	24.00	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	29.76	3.14	16.52	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.30	1.42	7.47	
1.1.4. REACTION CONTROL	15.92	2.02	10.61	
1.1.5. ELECTRICAL POWER	19.40	15.09	79.32	
1.1.5.1. SOLAR ARRAY	9.59	11.12	58.43	
1.1.5.2. BATTERIES	.41	1.16	6.11	
1.1.5.3. POWER COND & DIST	9.40	2.81	14.78	
1.1.6. TT&C	12.55	7.13	37.45	
1.1.7. RENDEZVOUS & DOCKING	27.40	3.77	19.82	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.72	2.60	13.66	
1.1.7.2. DOCKING (MECHANICAL)	7.68	1.17	6.16	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		4.30	22.59	
1.1.9. PROGRAM MANAGEMENT	2.88	2.87	15.06	
1.1.10. SYSTEMS ENGRG & INTEGRATION	20.94	3.01	15.81	
1.1.11. SYSTEMS TEST ARTICLE	40.12			
1.1.12. SYSTEM TEST OPERATIONS	9.93			
1.1.13. GSE	12.30			
1.1.14. PSE				
1.1.15. FACILITIES	4.61			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 8.00 12.00

11.41.30. 01/21/80

ITEM 36 BUS TYPE 4DC8 CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDTSE PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	142.62	35.08	350.23	492.84
1.1.1. STRUCTURE	11.22	2.00	19.97	
1.1.1.1. STRUCTURE (PRIMARY)	5.97	1.73	17.24	
1.1.1.2. STRUCTURE (SECONDARY)	4.51	.27	2.73	
1.1.1.3. STRUCTURE (TOOLING)	.74			
1.1.2. THERMAL CONTROL	2.87	.44	4.41	
1.1.3. ATTITUDE CONTROL	24.10	3.49	34.89	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	23.13	2.25	22.49	
1.1.3.2. ATTITUDE CONTROL (AMCD)	.97	1.24	12.41	
1.1.4. REACTION CONTROL	14.68	3.47	34.66	
1.1.5. ELECTRICAL POWER	14.71	12.57	125.51	
1.1.5.1. SOLAR ARRAY	7.03	9.02	90.09	
1.1.5.2. BATTERIES	.32	1.06	10.55	
1.1.5.3. POWER COND & DIST	7.35	2.49	24.87	
1.1.6. TTEC	8.26	5.43	54.17	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		3.29	32.83	
1.1.9. PROGRAM MANAGEMENT	5.61	2.19	21.89	
1.1.10. SYSTEMS ENGRG & INTEGRATION	12.06	2.19	21.89	
1.1.11. SYSTEMS TEST ARTICLE	30.69			
1.1.12. SYSTEM TEST OPERATIONS	5.91			
1.1.13. GSE	7.58			
1.1.14. FSE				
1.1.15. FACILITIES	3.93			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 8.00 12.00

11.41.30. 01/21/80

ITEM 37 BUS TYPE 40FB CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	146.97	36.72	366.64	513.61
1.1.1. STRUCTURE	12.20	2.56	26.75	
1.1.1.1. STRUCTURE (PRIMARY)	6.55	2.41	24.02	
1.1.1.2. STRUCTURE (SECONDARY)	4.51	.27	2.73	
1.1.1.3. STRUCTURE (TOOLING)	1.14			
1.1.2. THERMAL CONTROL	2.87	.44	4.41	
1.1.3. ATTITUDE CONTROL	24.39	3.73	37.22	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	23.37	2.45	24.47	
1.1.3.2. ATTITUDE CONTROL (APCD)	1.02	1.26	12.75	
1.1.4. REACTION CONTROL	15.01	3.84	38.34	
1.1.5. ELECTRICAL POWER	14.72	12.57	125.55	
1.1.5.1. SOLAR ARRAY	7.03	9.02	90.09	
1.1.5.2. BATTERIES	.32	1.06	10.55	
1.1.5.3. POWER COND & DIST	7.36	2.49	24.91	
1.1.6. TT&C	8.26	5.43	54.17	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		3.44	34.37	
1.1.9. PROGRAM MANAGEMENT	5.73	2.30	22.92	
1.1.10. SYSTEMS ENGRG & INTEGRATION	12.31	2.30	22.92	
1.1.11. SYSTEMS TEST ARTICLE	32.13			
1.1.12. SYSTEM TEST OPERATIONS	7.23			
1.1.13. GSE	7.74			
1.1.14. ESE				
1.1.15. FACILITIES	4.30			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 16.00 5.00

12.?5.31. 01/21/80

ITEM 38 BUS TYPE 41HC CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	210.19	56.75	260.76	470.96
1.1.1. STRUCTURE	12.00	2.26	10.05	
1.1.1.1. STRUCTURE (PRIMARY)	6.18	1.95	8.67	
1.1.1.2. STRUCTURE (SECONDARY)	4.95	.31	1.38	
1.1.1.3. STRUCTURE (TOOLING)	.87			
1.1.2. THERMAL CONTROL	3.10	.55	2.44	
1.1.3. ATTITUDE CONTROL	33.36	6.93	30.78	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	31.73	5.33	23.64	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.63	1.61	7.13	
1.1.4. REACTION CONTROL	23.67	12.00	53.24	
1.1.5. ELECTRICAL POWER	19.73	15.30	67.90	
1.1.5.1. SOLAR ARRAY	9.59	11.12	49.39	
1.1.5.2. BATTERIES	.41	1.25	5.56	
1.1.5.3. POWER COND & DIST	9.74	2.93	13.00	
1.1.6. TT&C	11.02	8.71	38.68	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)		-		
1.1.8. INTEGRATION, ASSEMBLY, & C/O		5.49	24.37	
1.1.9. PROGRAM MANAGEMENT	7.61	3.66	16.25	
1.1.10. SYSTEMS ENGRG & INTEGRATION	17.99	3.84	17.06	
1.1.11. SYSTEMS TEST ARTICLE	91.25			
1.1.12. SYSTEM TEST OPERATIONS	12.68			
1.1.13. GSE	10.29			
1.1.14. FSE				
1.1.15. FACILITIES	7.49			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 10.00 5.00

12.25.31. 01/21/60

ITEM 39 BUS TYPE 415E CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	221.18	47.68	211.65	432.83
1.1.1. STRUCTURE	12.92	2.95	13.10	
1.1.1.1. STRUCTURE (PRIMARY)	6.72	2.64	11.73	
1.1.1.2. STRUCTURE (SECONDARY)	4.97	.31	1.36	
1.1.1.3. STRUCTURE (TOOLING)	1.29			
1.1.2. THERMAL CONTROL	3.00	.20	2.24	
1.1.3. ATTITUDE CONTROL	31.31	4.78	21.20	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	29.96	3.33	14.76	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.35	1.45	6.44	
1.1.4. REACTION CONTROL	46.17	2.17	9.61	
1.1.5. ELECTRICAL POWER	49.68	15.28	67.83	
1.1.5.1. SOLAR ARRAY	9.59	11.12	49.35	
1.1.5.2. BATTERIES	.41	1.25	5.56	
1.1.5.3. POWER COND & DIST	9.69	2.91	12.92	
1.1.6. TT&C	19.75	7.58	33.64	
1.1.7. RENDEZVOUS & DOCKING	27.96	3.86	17.23	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.78	2.65	11.75	
1.1.7.2. DOCKING (MECHANICAL)	8.18	1.23	5.47	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		4.46	19.76	
1.1.9. PROGRAM MANAGEMENT	9.31	2.97	13.19	
1.1.10. SYSTEMS ENGRG & INTEGRATION	21.31	3.12	13.85	
1.1.11. SYSTEMS TEST ARTICLE	41.59			
1.1.12. SYSTEM TEST OPERATIONS	10.29			
1.1.13. GSE	12.18			
1.1.14. PSE				
1.1.15. FACILITIES	4.97			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE: UNITS PRODUCED 8.00 10.00

11.41.30. 01/21/80

ITEM 40 BUS TYPE 4168 CASE 11

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	154.00	39.61	335.70	489.70
1.1.1. STRUCTURE	12.74	2.96	24.95	
1.1.1.1. STRUCTURE (PRIMARY)	6.73	2.65	22.35	
1.1.1.2. STRUCTURE (SECONDARY)	4.93	.31	2.60	
1.1.1.3. STRUCTURE (TOOLING)	1.29			
1.1.2. THERMAL CONTROL	2.91	.46	3.91	
1.1.3. ATTITUDE CONTROL	24.72	4.01	33.82	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	23.64	2.69	22.71	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.08	1.32	11.11	
1.1.4. REACTION CONTROL	15.39	4.30	36.26	
1.1.5. ELECTRICAL POWER	15.41	13.34	112.54	
1.1.5.1. SOLAR ARRAY	7.36	9.57	80.69	
1.1.5.2. BATTERIES	.33	1.14	9.60	
1.1.5.3. POWER COND & DIST	7.73	2.64	22.25	
1.1.6. TT&C	9.41	6.02	50.77	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		3.73	31.47	
1.1.9. PROGRAM MANAGEMENT	5.90	2.49	20.98	
1.1.10. SYSTEMS ENGRG & INTEGRATION	12.69	2.49	20.98	
1.1.11. SYSTEMS TEST ARTICLE	34.83			
1.1.12. SYSTEM TEST OPERATIONS	7.84			
1.1.13. GSE	7.48			
1.1.14. PSE				
1.1.15. FACILITIES	4.37			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 10.00 5.00

12.25.31. 01/21/80

ITEM 41 BUS TYPE 4100 CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	236.05	56.00	248.56	484.61
1.1.1. STRUCTURE	13.19	3.13	13.08	
1.1.1.1. STRUCTURE (PRIMARY)	6.84	2.82	12.50	
1.1.1.2. STRUCTURE (SECONDARY)	4.95	.31	1.38	
1.1.1.3. STRUCTURE (TOOLING)	1.40			
1.1.2. THERMAL CONTROL	3.10	.55	2.44	
1.1.3. ATTITUDE CONTROL	32.64	6.10	27.06	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	31.14	4.56	20.24	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.50	1.54	6.82	
1.1.4. REACTION CONTROL	20.17	5.85	25.96	
1.1.5. ELECTRICAL POWER	28.27	15.94	70.74	
1.1.5.1. SOLAR ARRAY	9.97	11.71	51.96	
1.1.5.2. BATTERIES	.41	1.25	5.56	
1.1.5.3. POWER COND & DIST	9.89	2.98	13.22	
1.1.6. TT&C	11.02	6.71	30.66	
1.1.7. RENDEZVOUS & DOCKING	24.60	3.34	14.83	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.45	2.71	12.03	
1.1.7.2. DOCKING (MECHANICAL)	4.95	.63	2.80	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		5.23	23.23	
1.1.9. PROGRAM MANAGEMENT	9.26	3.49	15.49	
1.1.10. SYSTEMS ENGRG & INTEGRATION	21.89	3.66	16.26	
1.1.11. SYSTEMS TEST ARTICLE	48.85			
1.1.12. SYSTEM TEST OPERATIONS	12.09			
1.1.13. GSE	12.52			
1.1.14. FSE				
1.1.15. FACILITIES	5.25			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 16.00 5.00

12.25.31. 01/21/80

ITEM 42 BUS TYPE 410F CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1960$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	216.76	47.08	208.96	427.72
1.1.1. STRUCTURE	11.94	2.24	9.95	
1.1.1.1. STRUCTURE (PRIMARY)	6.16	1.94	8.59	
1.1.1.2. STRUCTURE (SECONDARY)	4.92	.31	1.36	
1.1.1.3. STRUCTURE (TOOLING)	.86			
1.1.2. THERMAL CONTROL	3.00	.56	2.24	
1.1.3. ATTITUDE CONTROL	31.02	4.53	20.11	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	29.72	3.11	13.81	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.30	1.42	6.30	
1.1.4. REACTION CONTROL	45.49	2.00	8.84	
1.1.5. ELECTRICAL POWER	23.23	15.92	70.66	
1.1.5.1. SOLAR ARRAY	9.97	11.71	51.98	
1.1.5.2. BATTERIES	.91	1.25	5.56	
1.1.5.3. POWER COND & DIST	[illegible]	2.97	13.17	
1.1.6. TT&C	10.76	7.58	33.64	
1.1.7. RENDEZVOUS & DOCKING	17.98	3.88	17.23	
1.1.7.1. RENDEZVOUS (AVIONICS)	14.78	2.65	11.75	
1.1.7.2. DOCKING (MECHANICAL)	3.19	1.23	5.47	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		4.40	19.53	
1.1.9. PROGRAM MANAGEMENT	8.94	2.93	13.02	
1.1.10. SYSTEMS ENGRG & INTEGRATION	21.13	3.03	13.67	
1.1.11. SYSTEMS TEST ARTICLE	4.07			
1.1.12. SYSTEM TEST OPERATIONS	12.14			
1.1.13. GSE	12.08			
1.1.14. PSE				
1.1.15. FACILITIES	4.54			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 16.00 5.00

12.25.31. 01/21/80

ITEM 43 BUS TYPE 41VE CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	225.59	44.54	219.89	445.58
1.1.1. STRUCTURE	13.54	3.42	15.16	
1.1.1.1. STRUCTURE (PRIMARY)	7.03	3.11	13.61	
1.1.1.2. STRUCTURE (SECONDARY)	4.92	.31	1.36	
1.1.1.3. STRUCTURE (TOOLING)	1.59			
1.1.2. THERMAL CONTROL	3.20	.50	2.24	
1.1.3. ATTITUDE CONTROL	31.54	4.78	22.10	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	30.16	3.31	15.56	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.39	1.47	6.53	
1.1.4. REACTION CONTROL	16.35	2.29	10.16	
1.1.5. ELECTRICAL POWER	20.24	15.43	70.70	
1.1.5.1. SOLAR ARRAY	9.97	11.71	51.96	
1.1.5.2. BATTERIES	.41	1.25	5.16	
1.1.5.3. POWER COND & DIST	[illegible]	2.47	13.19	
1.1.6. TT&C	10.76	7.58	33.64	
1.1.7. RENDEZVOUS & DOCKING	27.94	3.68	17.23	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.78	2.60	11.75	
1.1.7.2. DOCKING (MECHANICAL)	8.16	1.23	5.47	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		4.63	20.55	
1.1.9. PROGRAM MANAGEMENT	3.13	3.09	13.70	
1.1.10. SYSTEMS ENGRG & INTEGRATION	21.59	3.24	14.36	
1.1.11. SYSTEMS TEST ARTICLE	43.21			
1.1.12. SYSTEM TEST OPERATIONS	10.70			
1.1.13. GSE	12.34			
1.1.14. FSE				
1.1.15. FACILITIES	[illegible]			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE, UNITS PRODUCED 8.00 10.00

11.41.30. 01/21/80

ITEM 44 BUS TYPE 41VB CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	157.05	41.02	345.91	502.97
1.1.1. STRUCTURE	13.66	3.43	26.89	
1.1.1.1. STRUCTURE (PRIMARY)	7.04	3.12	26.29	
1.1.1.2. STRUCTURE (SECONDARY)	4.93	.31	2.60	
1.1.1.3. STRUCTURE (TOOLING)	1.69			
1.1.2. THERMAL CONTROL	2.91	.46	3.91	
1.1.3. ATTITUDE CONTROL	24.92	4.20	35.41	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	23.81	2.86	24.10	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.11	1.34	11.31	
1.1.4. REACTION CONTROL	15.62	4.54	38.69	
1.1.5. ELECTRICAL POWER	15.42	13.35	112.57	
1.1.5.1. SOLAR ARRAY	7.36	9.57	80.69	
1.1.5.2. BATTERIES	.33	1.14	9.60	
1.1.5.3. POWER COND & DIST	7.74	2.64	22.29	
1.1.6. TT&C	8.41	6.02	50.77	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)		-		
1.1.8. INTEGRATION, ASSEMBLY, & C/O		3.85	32.43	
1.1.9. PROGRAM MANAGEMENT	5.98	2.56	21.62	
1.1.10. SYSTEMS ENGRG & INTEGRATION	12.85	2.56	21.62	
1.1.11. SYSTEMS TEST ARTICLE	35.89			
1.1.12. SYSTEM TEST OPERATIONS	8.08			
1.1.13. GSE	4.08			
1.1.14. PSE				
1.1.15. FACILITIES	5.33			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE: UNITS PRODUCED 8.00 10.00

11.41.30. 01/21/80

ITEM 45 BUS TYPE 410B CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	149.59	36.11	321.38	470.98
1.1.1. STRUCTURE	11.96	2.25	16.98	
1.1.1.1. STRUCTURE (PRIMARY)	6.17	1.94	10.38	
1.1.1.2. STRUCTURE (SECONDARY)	4.93	.31	2.60	
1.1.1.3. STRUCTURE (TOOLING)	.86			
1.1.2. THERMAL CONTROL	2.91	.46	3.91	
1.1.3. ATTITUDE CONTROL	24.45	3.70	31.88	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	23.42	2.50	21.05	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.03	1.20	10.83	
1.1.4. REACTION CONTROL	15.07	3.91	33.00	
1.1.5. ELECTRICAL POWER	15.41	13.34	112.54	
1.1.5.1. SOLAR ARRAY	7.36	9.57	80.69	
1.1.5.2. BATTERIES	.33	1.14	9.60	
1.1.5.3. POWER COND & DIST	7.73	2.64	22.25	
1.1.6. TT&C	8.41	6.02	50.77	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		3.57	30.13	
1.1.9. PROGRAM MANAGEMENT	5.79	2.38	20.09	
1.1.10. SYSTEMS ENGRG & INTEGRATION	12.44	2.38	20.09	
1.1.11. SYSTEMS TEST ARTICLE	33.35			
1.1.12. SYSTEM TEST OPERATIONS	7.50			
1.1.13. GSE	7.82			
1.1.14. PSE				
1.1.15. FACILITIES	4.49			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 16.00 5.00

12.25.31. 01/21/80

ITEM 46 BUS TYPE 4260 CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	230.29	53.71	238.39	468.69
1.1.1. STRUCTURE	12.00	2.26	10.05	
1.1.1.1. STRUCTURE (PRIMARY)	6.19	1.95	8.67	
1.1.1.2. STRUCTURE (SECONDARY)	4.95	.31	1.38	
1.1.1.3. STRUCTURE (TOOLING)	.87			
1.1.2. THERMAL CONTROL	3.10	.55	2.44	
1.1.3. ATTITUDE CONTROL	32.25	5.69	25.25	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	30.82	4.19	18.60	
1.1.3.2. ATTITUDE CONTROL (ARCD)	1.43	1.50	6.65	
1.1.4. REACTION CONTROL	19.76	5.34	23.68	
1.1.5. ELECTRICAL POWER	20.27	15.94	70.74	
1.1.5.1. SOLAR ARRAY	9.97	11.71	51.96	
1.1.5.2. BATTERIES	.41	1.25	5.56	
1.1.5.3. POWER COND & DIST	9.89	2.98	13.22	
1.1.6. TT&C	11.02	8.71	38.66	
1.1.7. RENDEZVOUS & DOCKING	25.80	3.34	14.83	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.85	2.71	12.03	
1.1.7.2. DOCKING (MECHANICAL)	4.95	.63	2.80	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		5.02	22.28	
1.1.9. PROGRAM MANAGEMENT	9.13	3.35	14.85	
1.1.10. SYSTEMS ENGRG & INTEGRATION	21.55	3.51	15.60	
1.1.11. SYSTEMS TEST ARTICLE	46.95			
1.1.12. SYSTEM TEST OPERATIONS	11.60			
1.1.13. GSE	12.32			
1.1.14. PSE				
1.1.15. FACILITIES	4.67			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE: UNITS PRODUCED 16.00 4.00

12.75.31. 01/21/80

ITEM 47 BUS TYPE 43NC*CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1960$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	258.53	66.39	239.66	498.18
1.1.1. STRUCTURE	14.38	3.60	13.01	
1.1.1.1. STRUCTURE (PRIMARY)	7.11	3.24	11.69	
1.1.1.2. STRUCTURE (SECONDARY)	5.60	.37	1.32	
1.1.1.3. STRUCTURE (TOOLING)	1.67			
1.1.2. THERMAL CONTROL	3.22	.61	2.20	
1.1.3. ATTITUDE CONTROL	33.47	7.07	25.53	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	31.82	5.45	19.69	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.65	1.62	5.84	
1.1.4. REACTION CONTROL	21.04	7.06	25.50	
1.1.5. ELECTRICAL POWER	20.76	19.31	69.71	
1.1.5.1. SOLAR ARRAY	11.44	14.01	50.57	
1.1.5.2. BATTERIES	.42	1.01	5.01	
1.1.5.3. POWER COND & DIST	11.90	3.69	13.33	
1.1.6. TT&C	11.38	10.50	37.91	
1.1.7. DEPLOYMENT & DOCKING	4.14	3.54	12.79	
1.1.7.1. DEPLOYMENTS (AVIONICS)	2.04	2.88	10.41	
1.1.7.2. DOCKING (MECHANICAL)	2.11	.66	2.37	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		6.20	22.40	
1.1.9. PROGRAM MANAGEMENT	4.13	4.14	14.93	
1.1.10. SYSTEMS ENGR & INTEGRATION	23.16	4.34	15.66	
1.1.11. SYSTEMS TEST ARTICLE	57.91			
1.1.12. SYSTEM TEST OPERATIONS	49.33			
1.1.13. GSE	23.24			
1.1.14. [illegible]				
1.1.15. FACILITIES	7.77			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE: UNITS PRODUCED 16.00 4.00

12.25.31. 01/21/80

ITEM 48 BUS TYPE 430E CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	243.79	57.41	207.23	451.02
1.1.1. STRUCTURE	14.23	3.46	12.56	
1.1.1.1. STRUCTURE (PRIMARY)	7.04	3.11	11.24	
1.1.1.2. STRUCTURE (SECONDARY)	5.61	.37	1.32	
1.1.1.3. STRUCTURE (TOOLING)	1.59			
1.1.2. THERMAL CONTROL	3.11	.55	2.00	
1.1.3. ATTITUDE CONTROL	32.11	5.51	19.89	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	30.62	3.98	14.36	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.49	1.53	5.52	
1.1.4. REACTION CONTROL	16.99	2.63	9.51	
1.1.5. ELECTRICAL POWER	23.73	19.23	69.65	
1.1.5.1. SOLAR ARRAY	11.44	14.01	50.57	
1.1.5.2. BATTERIES	.42	1.61	5.81	
1.1.5.3. POWER COND & DIST	11.86	3.67	13.27	
1.1.6. TT&C	11.10	9.09	32.82	
1.1.7. RENDEZVOUS & DOCKING	25.69	4.15	14.97	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.94	2.80	10.10	
1.1.7.2. DOCKING (MECHANICAL)	5.75	1.35	4.87	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		5.36	19.37	
1.1.9. PROGRAM MANAGEMENT	3.61	3.56	12.91	
1.1.10. SYSTEMS ENGRG & INTEGRATION	22.71	3.76	13.56	
1.1.11. SYSTEM TEST ARTICLE	57.07			
1.1.12. SYST & TEST OPERATIONS	45.14			
1.1.13. [illegible]	12.[illegible]			
1.1.14. [illegible]				
1.1.15. [illegible]	[illegible]			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 8.00 8.00

11.41.30. 01/21/80

ITEM 49 BUS TYPE 4308 CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	171.73	47.98	329.08	500.86
1.1.1. STRUCTURE	14.22	3.47	23.83	
1.1.1.1. STRUCTURE (PRIMARY)	7.03	3.11	21.33	
1.1.1.2. STRUCTURE (SECONDARY)	5.60	.37	2.50	
1.1.1.3. STRUCTURE (TOOLING)	1.59			
1.1.2. THERMAL CONTROL	3.02	.51	3.51	
1.1.3. ATTITUDE CONTROL	25.37	4.04	31.82	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	24.18	3.25	22.27	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.19	1.39	9.55	
1.1.4. REACTION CONTROL	16.10	5.26	36.08	
1.1.5. ELECTRICAL POWER	16.35	16.36	112.23	
1.1.5.1. SOLAR ARRAY	7.58	11.70	80.23	
1.1.5.2. BATTERIES	.33	1.38	9.48	
1.1.5.3. POWER COND & DIST	9.35	3.28	22.52	
1.1.6. TT&C	8.08	7.23	49.62	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		4.50	30.65	
1.1.9. PROGRAM MANAGEMENT	6.34	3.00	20.57	
1.1.10. SYSTEMS ENGRG & INTEGRATION	13.62	3.00	20.57	
1.1.11. SYSTEMS TEST ARTICLE	41.98			
1.1.12. SYSTEM TEST OPERATIONS	8.45			
1.1.13. GSE	8.56			
1.1.14. FSE				
1.1.15. FACILITIES	6.19			

Table I-2. Nominal Traffic Model Cost Runs, Contd

12.2..31. 01/21/80

ATLM 50 BUS TYPE 43LC CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	245.14	75.72	274.08	519.22
1.1.1. STRUCTURE	14.48	3.68	13.26	
1.1.1.1. STRUCTURE (PRIMARY)	7.16	3.31	11.97	
1.1.1.2. STRUCTURE (SECONDARY)	5.80	.37	1.32	
1.1.1.3. STRUCTURE (TOOLING)	1.72			
1.1.2. THERMAL CONTROL	3.22	.61	2.20	
1.1.3. ATTITUDE CONTROL	34.78	8.91	32.16	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	32.89	7.16	25.86	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.89	1.74	6.30	
1.1.4. REACTION CONTROL	25.29	16.16	58.34	
1.1.5. ELECTRICAL POWER	23.64	19.27	69.56	
1.1.5.1. SOLAR ARRAY	11.44	14.01	50.57	
1.1.5.2. BATTERIES	.42	1.61	5.81	
1.1.5.3. POWER COND & DIST	11.79	3.65	13.17	
1.1.6. TT&C	11.39	10.50	37.91	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		7.10	25.61	
1.1.9. PROGRAM MANAGEMENT	8.35	4.73	17.08	
1.1.10. SYSTEMS ENGRG & INTEGRATION	19.73	4.97	17.93	
1.1.11. SYSTEMS TEST ARTICLE	66.22			
1.1.12. SYSTEM TEST OPERATIONS	16.39			
1.1.13. GSE	11.28			
1.1.14. PSE				
1.1.15. FACILITIES	10.38			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 16.00 4.00

12.25.31. 01/21/80

ITEM 21 DDS TYPE 4310 CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1/80$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (PDS) -TOTAL	251.72	63.64	229.75	481.63
1.1.1. STRUCTURE	13.14	2.66	9.62	
1.1.1.1. STRUCTURE (PRIMARY)	5.47	2.30	8.30	
1.1.1.2. STRUCTURE (SECONDARY)	5.83	.37	1.32	
1.1.1.3. STRUCTURE (TORQUING)	1.84			
1.1.2. THERMAL CONTROL	3.22	.61	2.20	
1.1.3. ATTITUDE CONTROL	33.35	6.65	23.84	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	31.50	5.62	18.14	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.58	1.58	5.71	
1.1.4. REACTION CONTROL	20.64	6.48	23.39	
1.1.5. ELECTRICAL POWER	23.60	19.16	69.18	
1.1.5.1. SOLAR ARRAY	11.44	14.01	50.57	
1.1.5.2. BATTERIES	.41	1.52	5.49	
1.1.5.3. POWER COND & DIST	11.74	3.63	13.11	
1.1.6. TT&C	11.38	10.50	37.91	
1.1.7. RENDEZVOUS & DOCKING	25.15	3.54	12.79	
1.1.7.1. RENDEZVOUS (AVIONICS)	20.04	2.88	10.41	
1.1.7.2. DOCKING (MECHANICAL)	5.11	.66	2.37	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		5.95	21.47	
1.1.9. PROGRAM MANAGEMENT	9.63	3.97	14.31	
1.1.10. SYSTEMS ENGRG & INTEGRATION	22.77	4.16	15.03	
1.1.11. SYSTEMS TEST ARTICLE	55.51			
1.1.12. SYSTEM TEST OPERATIONS	13.74			
1.1.13. GSE	13.32			
1.1.14. PSE				
1.1.15. FACILITIES	7.01			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE, UNITS PRODUCED 16.00 4.00

12.25.31. 01/21/80

ITEM 52 BUS TYPE 4BGE CASE 111

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	239.16	55.71	201.12	440.28
1.1.1. STRUCTURE	13.15	2.67	9.64	
1.1.1.1. STRUCTURE (PRIMARY)	6.47	2.30	8.32	
1.1.1.2. STRUCTURE (SECONDARY)	[illegible]	.37	1.32	
1.1.1.3. STRUCTURE (TOOLING)	[illegible]			
1.1.2. THERMAL CONTROL	3.11	.55	2.00	
1.1.3. ATTITUDE CONTROL	31.79	5.29	16.77	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	30.35	3.70	13.37	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.43	[illegible]	3.41	
1.1.4. REACTION CONTROL	16.46	2.43	8.74	
1.1.5. ELECTRICAL POWER	63.72	19.27	69.65	
1.1.5.1. SOLAR ARRAY	[illegible]	14.04	50.57	
1.1.5.2. BATTERIES	.43	1.01	3.81	
1.1.5.3. POWER COND & DIST	11.86	3.67	13.27	
1.1.6. TT&C	11.10	9.07	32.82	
1.1.7. RENDEZVOUS & DOCKING	[illegible]	4.15	14.97	
1.1.7.1. RENDEZVOUS (AVIONICS)	12.95	2.80	10.10	
1.1.7.2. DOCKING (MECHANICAL)	3.75	1.35	4.87	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		5.21	16.80	
1.1.9. PROGRAM MANAGEMENT	9.49	3.47	12.53	
1.1.10. SYSTEMS ENGRG & INTEGRATION	22.42	3.64	13.16	
1.1.11. SYSTEMS TEST ARTICLE	[illegible]			
1.1.12. SYSTEM TEST OPERATIONS	12.33			
1.1.13. GSE	[illegible]			
1.1.14. PSE				
1.1.15. FACILITIES	5.66			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 8.00 8.00

11.41.30. 01/21/60

ITEM 53 BUS TYPE 436B CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	166.73	45.96	315.21	481.94
1.1.1. STRUCTURE	13.14	2.66	19.27	
1.1.1.1. STRUCTURE (PRIMARY)	6.46	2.30	15.77	
1.1.1.2. STRUCTURE (SECONDARY)	5.60	.37	2.50	
1.1.1.3. STRUCTURE (TOOLING)	1.07			
1.1.2. THERMAL CONTROL	3.02	.51	3.51	
1.1.3. ATTITUDE CONTROL	25.07	4.34	29.74	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	23.93	2.98	20.43	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.14	1.36	9.31	
1.1.4. REACTION CONTROL	15.77	4.80	32.91	
1.1.5. ELECTRICAL POWER	18.24	16.38	112.21	
1.1.5.1. SOLAR ARRAY	8.53	11.70	80.23	
1.1.5.2. BATTERIES	.33	1.38	9.48	
1.1.5.3. POWER COND & DIST	9.34	3.28	22.50	
1.1.6. TT&C	9.69	7.23	49.62	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)		-		
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		4.31	29.55	
1.1.9. PROGRAM MANAGEMENT	6.21	2.87	19.70	
1.1.10. SYSTEMS ENGRG & INTEGRATION	13.34	2.87	19.70	
1.1.11. SYSTEMS TEST ARTICLE	40.21			
1.1.12. SYSTEM TEST OPERATIONS	9.05			
1.1.13. GSE	8.39			
1.1.14. FSE				
1.1.15. FACILITIES	5.60			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE: UNITS PRODUCED 16.00 4.00

12.25.31. 01/21/60

ITEM 54 BUS TYPE 43JC CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1960$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	236.39	71.73	256.94	495.33
1.1.1. STRUCTURE	13.14	2.66	9.62	
1.1.1.1. STRUCTURE (PRIMARY)	6.47	2.30	8.30	
1.1.1.2. STRUCTURE (SECONDARY)	5.60	.37	1.32	
1.1.1.3. STRUCTURE (TOOLING)	1.05			
1.1.2. THERMAL CONTROL	3.22	.61	2.20	
1.1.3. ATTITUDE CONTROL	34.31	8.21	29.53	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	27.51	6.51	23.4	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.43	1.70	6.14	
1.1.4. REACTION CONTROL	24.76	14.70	53.00	
1.1.5. ELECTRICAL POWER	23.63	19.17	69.22	
1.1.5.1. SOLAR ARRAY	11.44	14.02	50.57	
1.1.5.2. BATTERIES	.41	1.52	5.49	
1.1.5.3. POWER COND & DIST	11.78	3.65	13.16	
1.1.6. TT&C	11.38	26.50	97.91	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		6.70	24.20	
1.1.9. PROGRAM MANAGEMENT	8.17	4.47	16.13	
1.1.10. SYSTEMS ENGRG & INTEGRATION	19.22	4.69	16.94	
1.1.11. SYSTEMS TEST ARTICLE	62.57			
1.1.12. SYSTEM TEST OPERATIONS	13.49			
1.1.13. GSE	11.04			
1.1.14. PSE				
1.1.15. FACILITIES	7.34			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 8.00 6.00

11.4..30. 01/21/80

ITEM 55 BUS TYPE 444B CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	197.06	60.31	316.94	514.00
1.1.1. STRUCTURE	13.34	3.94	20.70	
1.1.1.1. STRUCTURE (PRIMARY)	7.20	3.52	18.51	
1.1.1.2. STRUCTURE (SECONDARY)	5.20	.42	2.20	
1.1.1.3. STRUCTURE (TOOLING)	1.86			
1.1.2. THERMAL CONTROL	3.14	.57	2.99	
1.1.3. ATTITUDE CONTROL	26.34	5.37	28.20	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	24.72	3.90	20.48	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.31	1.47	7.72	
1.1.4. REACTION CONTROL	16.81	6.36	33.54	
1.1.5. ELECTRICAL POWER	23.32	22.19	116.58	
1.1.5.1. SOLAR ARRAY	10.78	15.77	82.86	
1.1.5.2. BATTERIES	.34	1.45	10.25	
1.1.5.3. POWER COND & DIST	12.20	4.47	23.46	
1.1.6. TTEC	8.96	8.68	45.60	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		5.65	29.71	
1.1.9. PROGRAM MANAGEMENT	6.93	3.77	19.81	
1.1.10. SYSTEMS ENGRG & INTEGRATION	14.88	3.77	19.81	
1.1.11. SYSTEMS TEST ARTICLE	52.77			
1.1.12. SYSTEM TEST OPERATIONS	11.87			
1.1.13. GSE	9.36			
1.1.14. PSE				
1.1.15. FACILITIES	7.65			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 6.00 6.00

11.41.30. 01/21/80

ITEM 57 BUS TYPE 44H3 CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	1v1.64	5e.08	3G5.20	496.84
1.1.1. STRUCTURE	14.19	3.05	16.03	
1.1.1.1. STRUCTURE (PRIMARY)	6.71	2.63	13.83	
1.1.1.2. STRUCTURE (SECONDARY)	6.20	.42	2.20	
1.1.1.3. STRUCTURE (TOOLING)	1.28			
1.1.2. THERMAL CONTROL	3.14	.57	2.99	
1.1.3. ATTITUDE CONTROL	25.74	5.02	26.40	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	24.47	3.59	18.85	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.25	1.44	7.54	
1.1.4. REACTION CONTROL	16.50	5.87	30.86	
1.1.5. ELECTRICAL POWER	23.31	22.10	116.56	
1.1.5.1. SOLAR ARRAY	15.79	15.77	82.86	
1.1.5.2. BATTERIES	.34	1.95	10.25	
1.1.5.3. POWER COND & DIST	12.19	4.46	23.44	
1.1.6. TT&C	8.96	8.68	45.60	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		5.44	28.61	
1.1.9. PROGRAM MANAGEMENT	6.80	3.63	19.08	
1.1.10. SYSTEMS ENGRG & INTEGRATION	14.60	3.63	19.08	
1.1.11. SYSTEMS TEST ARTICLE	50.92			
1.1.12. SYSTEM TEST OPERATIONS	11.43			
1.1.13. GSE	9.19			
1.1.14. PSE				
1.1.15. FACILITIES	5.94			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 10.00 3.00

12.25.31. 01/21/80

ITEM 56 BUS TYPE 444E CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	267.05	62.80	190.26	456.24
1.1.1. STRUCTURE	14.21	3.06	6.46	
1.1.1.1. STRUCTURE (PRIMARY)	6.72	2.64	7.30	
1.1.1.2. STRUCTURE (SECONDARY)	6.20	.42	1.16	
1.1.1.3. STRUCTURE (TOOLING)	1.28			
1.1.2. THERMAL CONTROL	3.23	.02	1.71	
1.1.3. ATTITUDE CONTROL	32.60	6.01	16.62	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	31.02	4.43	12.26	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.58	1.58	4.37	
1.1.4. REACTION CONTROL	17.31	2.94	8.14	
1.1.5. ELECTRICAL POWER	29.95	25.55	73.67	
1.1.5.1. SOLAR ARRAY	14.11	18.43	50.98	
1.1.5.2. BATTERIES	.43	2.15	5.94	
1.1.5.3. POWER COND & DIST	15.42	4.97	13.75	
1.1.6. TT&C	11.47	11.01	30.44	
1.1.7. RENDEZVOUS & DOCKING	29.20	4.40	12.16	
1.1.7.1. RENDEZVOUS (AVIONICS)	20.15	2.99	8.26	
1.1.7.2. DOCKING (MECHANICAL)	9.05	1.41	3.90	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		6.43	17.78	
1.1.9. PROGRAM MANAGEMENT	10.21	4.29	11.86	
1.1.10. SYSTEMS ENGRG & INTEGRATION	24.13	4.50	12.45	
1.1.11. SYSTEMS TEST ARTICLE	60.01			
1.1.12. SYSTEM TEST OPERATIONS	14.35			
1.1.13. GSE	13.30			
1.1.14. PSE				
1.1.15. FACILITIES	7.33			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE: UNITS PRODUCED 16.00 2.00

13.15.26. 01/31/80

ITEM 59 -RERUN- BUS Type 47JC* CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	ROTSE PHASE COST	FIRST UNIT COST	PROD PHASE COST	ROT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	321.38	97.37	185.01	506.39
1.1.1. STRUCTURE	15.79	3.60	6.96	
1.1.1.1. STRUCTURE (PRIMARY)	7.06	3.16	6.00	
1.1.1.2. STRUCTURE (SECONDARY)	7.11	.50	.95	
1.1.1.3. STRUCTURE (TOOLING)	1.62			
1.1.2. THERMAL CONTROL	3.52	.78	1.49	
1.1.3. ATTITUDE CONTROL	35.04	9.32	17.71	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	33.10	7.55	14.34	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.94	1.77	3.36	
1.1.4. REACTION CONTROL	22.61	9.77	18.56	
1.1.5. ELECTRICAL POWER	35.18	32.35	61.47	
1.1.5.1. SOLAR ARRAY	16.92	23.44	44.07	
1.1.5.2. BATTERIES	.44	2.86	5.44	
1.1.5.3. POWER COND & DIST	18.92	6.36	11.97	
1.1.6. TT&C	12.19	15.74	29.91	
1.1.7. RENDEZVOUS & DOCKING	26.23	4.21	8.00	
1.1.7.1. RENDEZVOUS (AVIONICS)	20.62	3.46	6.58	
1.1.7.2. DOCKING (MECHANICAL)	5.61	.75	1.42	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		9.10	17.29	
1.1.9. PROGRAM MANAGEMENT	11.22	6.07	11.53	
1.1.10. SYSTEMS ENGRG & INTEGRATION	26.51	6.37	12.10	
1.1.11. SYSTEMS TEST ARTICLE	84.94			
1.1.12. SYSTEM TEST OPERATIONS	21.02			
1.1.13. GSE	15.16			
1.1.14. PSE				
1.1.15. FACILITIES	10.93			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 10.00 2.00

13.15.26. 01/31/83

ITEM 60 -RERUN- BUS TYPE 4SLC* CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	327.11	99.68	189.77	516.88
1.1.1. STRUCTURE	16.92	4.56	8.66	
1.1.1.1. STRUCTURE (PRIMARY)	7.57	4.06	7.76	
1.1.1.2. STRUCTURE (SECONDARY)	7.11	.50	.95	
1.1.1.3. STRUCTURE (TOOLING)	2.23			
1.1.2. THERMAL CONTROL	3.52	.76	1.44	
1.1.3. ATTITUDE CONTROL	35.34	9.61	18.04	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	33.34	8.01	15.22	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.99	1.60	3.41	
1.1.4. REACTION CONTROL	22.89	10.33	19.63	
1.1.5. ELECTRICAL POWER	36.19	32.36	61.48	
1.1.5.1. SOLAR ARRAY	16.82	23.49	44.07	
1.1.5.2. BATTERIES	.44	2.86	5.44	
1.1.5.3. POWER COND & DIST	18.93	6.36	11.97	
1.1.6. TT&C	12.19	15.74	29.91	
1.1.7. RENDEZVOUS & DOCKING	26.23	4.21	8.00	
1.1.7.1. RENDEZVOUS (AVIONICS)	20.62	3.46	6.58	
1.1.7.2. DOCKING (MECHANICAL)	5.61	.75	1.42	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		9.33	17.74	
1.1.9. PROGRAM MANAGEMENT	11.34	6.22	11.82	
1.1.10. SYSTEMS ENGRG & INTEGRATION	26.81	6.53	12.41	
1.1.11. SYSTEMS TEST ARTICLE	87.12			
1.1.12. SYSTEM TEST OPERATIONS	21.56			
1.1.13. GSE	15.33			
1.1.14. PSE				
1.1.15. FACILITIES	11.67			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 16.00 3.00

12.25.31. 01/21/80

ITEM 61 BUS TYPE 45MC CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	271.61	89.57	247.74	519.35
1.1.1. STRUCTURE	14.19	3.05	8.44	
1.1.1.1. STRUCTURE (PRIMARY)	6.71	2.63	7.28	
1.1.1.2. STRUCTURE (SECONDARY)	6.20	.42	1.16	
1.1.1.3. STRUCTURE (TOOLING)	1.24			
1.1.2. THERMAL CONTROL	3.34	.66	1.87	
1.1.3. ATTITUDE CONTROL	35.34	9.81	27.13	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	33.34	8.01	22.16	
1.1.3.2. ATTITUDE CONTROL (AMCD)	2.00	1.80	4.97	
1.1.4. REACTION CONTROL	25.91	18.02	49.84	
1.1.5. ELECTRICAL POWER	25.22	25.53	70.61	
1.1.5.1. SOLAR ARRAY	14.11	18.43	50.98	
1.1.5.2. BATTERIES	.43	2.15	5.94	
1.1.5.3. POWER COND & DIST	10.34	4.95	13.70	
1.1.6. TT&C	11.75	12.67	35.04	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		8.37	23.15	
1.1.9. PROGRAM MANAGEMENT	5.31	5.58	15.44	
1.1.10. SYSTEMS ENGRG & INTEGRATION	21.06	5.86	16.21	
1.1.11. SYSTEMS TEST ARTICLE	7.13			
1.1.12. SYSTEM TEST OPERATIONS	10.14			
1.1.13. GSE	12.64			
1.1.14. PSE				
1.1.15. FACILITIES	11.52			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 10.00 2.00

12.25.31. 01/21/80

ITEM 62 [illegible] YPE 46MC CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	313.82	111.72	212.27	526.09
1.1.1. STRUCTURE	15.79	3.66	6.96	
1.1.1.1. STRUCTURE (PRIMARY)	7.06	3.16	6.01	
1.1.1.2. STRUCTURE (SECONDARY)	7.11	.50	.95	
1.1.1.3. STRUCTURE (TOOLING)	1.62			
1.1.2. THERMAL CONTROL	3.52	.78	1.49	
1.1.3. ATTITUDE CONTROL	35.63	12.23	23.25	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	34.38	10.31	19.60	
1.1.3.2. ATTITUDE CONTROL (AMCD)	2.25	1.92	3.65	
1.1.4. REACTION CONTROL	27.32	22.86	43.47	
1.1.5. ELECTRICAL POWER	35.91	31.71	60.25	
1.1.5.1. SOLAR ARRAY	14.53	22.67	43.08	
1.1.5.2. BATTERIES	.43	2.77	5.27	
1.1.5.3. POWER COND & DIST	18.94	6.27	11.91	
1.1.6. TTEC	12.19	15.79	29.91	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		10.44	19.84	
1.1.9. PROGRAM MANAGEMENT	9.71	6.96	13.23	
1.1.10. SYSTEMS ENGRG & INTEGRATION	22.96	7.31	13.89	
1.1.11. SYSTEMS TEST ARTICLE	97.45			
1.1.12. SYSTEM TEST OPERATIONS	24.12			
1.1.13. GSE	23.13			
1.1.14. PSE				
1.1.15. FACILITIES	15.17			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE: UNITS PRODUCED 6.00 4.00

11.41.30. 01/21/80

ITEM 63 BUS TYPE 4738 CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	220.82	72.60	262.10	482.91
1.1.1. STRUCTURE	15.78	3.66	13.22	
1.1.1.1. STRUCTURE (PRIMARY)	7.06	3.16	11.41	
1.1.1.2. STRUCTURE (SECONDARY)	7.10	.50	1.81	
1.1.1.3. STRUCTURE (TOOLING)	1.62			
1.1.2. THERMAL CONTROL	3.31	.66	2.38	
1.1.3. ATTITUDE CONTROL	25.60	6.07	21.92	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	25.18	4.54	16.38	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.42	1.53	5.53	
1.1.4. REACTION CONTROL	17.39	7.45	26.89	
1.1.5. ELECTRICAL POWER	28.05	27.82	100.44	
1.1.5.1. SOLAR ARRAY	12.76	19.66	70.97	
1.1.5.2. BATTERIES	.35	2.52	9.10	
1.1.5.3. POWER COND & DIST	14.95	5.64	20.37	
1.1.6. TTEC	9.33	11.06	39.92	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		6.61	24.57	
1.1.9. PROGRAM MANAGEMENT	7.44	4.54	16.38	
1.1.10. SYSTEMS ENGRG & INTEGRATION	15.98	4.54	16.38	
1.1.11. SYSTEMS TEST ARTICLE	63.53			
1.1.12. SYSTEM TEST OPERATIONS	14.29			
1.1.13. GSE	10.35			
1.1.14. FSE				
1.1.15. FACILITIES	5.06			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 10.00 2.00

12 25.31. 01/21/80

ITEM 64 BUS TYPE 47JE CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	302.55	64.98	161.47	464.02
1.1.1. STRUCTURE	15.31	3.67	6.97	
1.1.1.1. STRUCTURE (PRIMARY)	7.07	3.17	6.02	
1.1.1.2. STRUCTURE (SECONDARY)	7.12	.50	.96	
1.1.1.3. STRUCTURE (TOOLING)	1.62			
1.1.2. THERMAL CONTROL	3.40	.71	1.35	
1.1.3. ATTITUDE CONTROL	33.64	7.21	13.71	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	31.88	5.53	10.51	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.77	1.68	3.19	
1.1.4. REACTION CONTROL	18.22	3.70	7.03	
1.1.5. ELECTRICAL POWER	54.12	32.33	61.42	
1.1.5.1. SOLAR ARRAY	16.82	23.19	44.07	
1.1.5.2. BATTERIES	.44	2.86	5.44	
1.1.5.3. POWER COND & DIST	13.86	6.27	11.92	
1.1.6. TT&C	11.91	13.75	26.13	
1.1.7. RENDEZVOUS & DOCKING	30.00	4.81	9.14	
1.1.7.1. RENDEZVOUS (AVIONICS)	20.46	3.30	6.27	
1.1.7.2. DOCKING (MECHANICAL)	9.53	1.51	2.87	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		7.94	15.06	
1.1.9. PROGRAM MANAGEMENT	11.03	5.29	10.06	
1.1.10. SYSTEMS ENGRG & INTEGRATION	28.08	5.56	10.56	
1.1.11. SYSTEMS TEST ARTICLE	74.13			
1.1.12. SYSTEM TEST OPERATIONS	11.35			
1.1.13. GSE	14.71			
1.1.14. FSE				
1.1.15. FACILITIES	8.35			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 8.00 4.00

11.41.30. 01/21/80

ITEM 65 BUS TYPE 4TL8 CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1960$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	226.16	74.07	270.30	496.46
1.1.1. STRUCTURE	15.91	4.56	16.45	
1.1.1.1. STRUCTURE (PRIMARY)	7.57	4.05	14.64	
1.1.1.2. STRUCTURE (SECONDARY)	7.10	.50	1.81	
1.1.1.3. STRUCTURE (TOOLING)	2.23			
1.1.2. THERMAL CONTROL	3.31	.66	2.38	
1.1.3. ATTITUDE CONTROL	26.96	6.42	23.17	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	25.39	4.86	17.53	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.47	1.56	5.64	
1.1.4. REACTION CONTROL	17.66	7.98	28.79	
1.1.5. ELECTRICAL POWER	28.06	27.63	100.45	
1.1.5.1. SOLAR ARRAY	12.76	19.66	70.97	
1.1.5.2. BATTERIES	.35	2.52	9.10	
1.1.5.3. POWER COND & DIST	14.96	5.65	20.38	
1.1.6. TT&C	9.33	11.06	39.92	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		7.02	25.34	
1.1.9. PROGRAM MANAGEMENT	7.56	4.68	16.89	
1.1.10. SYSTEMS ENGRG & INTEGRATION	16.24	4.68	16.89	
1.1.11. SYSTEMS TEST ARTICLE	65.51			
1.1.12. SYSTEM TEST OPERATIONS	14.74			
1.1.13. GSE	10.21			
1.1.14. FSE				
1.1.15. FACILITIES	9.76			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 16.00 2.00

12.25.31. 01/21/80

ITEM 00 BUS TYPE 47LS CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	307.41	86.00	165.07	472.48
1.1.1. STRUCTURE	16.93	4.56	8.67	
1.1.1.1. STRUCTURE (PRIMARY)	7.58	4.06	7.72	
1.1.1.2. STRUCTURE (SECONDARY)	7.12	.50	.96	
1.1.1.3. STRUCTURE (TOOLING)	2.24			
1.1.2. THERMAL CONTROL	3.40	.71	1.35	
1.1.3. ATTITUDE CONTROL	33.92	7.57	14.39	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	32.10	5.86	11.14	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.82	1.71	3.25	
1.1.4. REACTION CONTROL	18.46	3.92	7.45	
1.1.5. ELECTRICAL POWER	36.17	32.33	61.42	
1.1.5.1. SOLAR ARRAY	16.82	23.19	44.07	
1.1.5.2. BATTERIES	.44	2.86	5.44	
1.1.5.3. POWER COND & DIST	18.80	6.27	11.92	
1.1.6. TT&C	11.91	13.75	26.13	
1.1.7. RENDEZVOUS & DOCKING	30.00	4.81	9.14	
1.1.7.1. RENDEZVOUS (AVIONICS)	20.46	3.30	6.27	
1.1.7.2. DOCKING (MECHANICAL)	9.53	1.51	2.87	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		8.12	15.43	
1.1.9. PROGRAM MANAGEMENT	11.15	5.41	10.28	
1.1.10. SYSTEMS ENGRG & INTEGRATION	25.36	5.66	10.80	
1.1.11. SYSTEMS TEST ARTICLE	75.78			
1.1.12. SYSTEM TEST OPERATIONS	13.74			
1.1.13. GSE	25.07			
1.1.14. PSE				
1.1.15. FACILITIES	9.54			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE: UNITS PRODUCED 16.00 2.00

12.25.31. 01/21/80

ITEM 67 BUS TYPE 69KC' CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	322.60	97.93	186.06	508.66
1.1.1. STRUCTURE	15.79	3.66	6.96	
1.1.1.1. STRUCTURE (PRIMARY)	7.06	3.16	6.00	
1.1.1.2. STRUCTURE (SECONDARY)	7.11	.50	.95	
1.1.1.3. STRUCTURE (TOOLING)	1.62			
1.1.2. THERMAL CONTROL	3.52	.78	1.49	
1.1.3. ATTITUDE CONTROL	35.16	9.52	18.06	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	33.20	7.74	14.70	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.96	1.78	3.38	
1.1.4. REACTION CONTROL	27.73	10.00	18.99	
1.1.5. ELECTRICAL POWER	36.19	32.36	61.48	
1.1.5.1. SOLAR ARRAY	16.82	23.19	44.07	
1.1.5.2. BATTERIES	.44	2.86	5.44	
1.1.5.3. POWER COND & DIST	18.93	6.30	11.97	
1.1.6. TT&C	12.19	15.74	29.91	
1.1.7. RENDEZVOUS & DOCKING	25.23	4.21	8.00	
1.1.7.1. RENDEZVOUS (AVIONICS)	20.62	3.46	6.58	
1.1.7.2. DOCKING (MECHANICAL)	5.61	.75	1.42	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		9.15	17.39	
1.1.9. PROGRAM MANAGEMENT	11.23	6.13	11.64	
1.1.10. SYSTEMS ENGRG & INTEGRATION	26.55	6.41	12.17	
1.1.11. SYSTEMS TEST ARTICLE	65.42			
1.1.12. SYSTEM TEST OPERATIONS	21.14			
1.1.13. GSE	15.18			
1.1.14. PSE				
1.1.15. FACILITIES	11.26			

Table I-2. Nominal Traffic Model Cost Runs, .Contd

SYSTEM LIFE; UNITS PRODUCED 10.00 2.00

12.25.31. 01/21/80

ITEM 66 BUS TYPE 48MC* CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	322.60	97.93	186.06	508.66
1.1.1. STRUCTURE	15.79	3.06	6.96	
1.1.1.1. STRUCTURE (PRIMARY)	7.06	3.16	6.00	
1.1.1.2. STRUCTURE (SECONDARY)	7.11	.50	.95	
1.1.1.3. STRUCTURE (TOOLING)	1.62			
1.1.2. THERMAL CONTROL	3.52	.76	1.44	
1.1.3. ATTITUDE CONTROL	35.16	9.52	18.08	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	33.20	7.74	14.70	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.96	1.73	3.38	
1.1.4. REACTION CONTROL	22.73	10.00	18.99	
1.1.5. ELECTRICAL POWER	36.19	32.36	61.48	
1.1.5.1. SOLAR ARRAY	15.32	23.19	44.07	
1.1.5.2. BATTERIES	.44	2.86	5.44	
1.1.5.3. POWER COND & DIST	18.93	6.30	11.97	
1.1.6. TT&C	12.19	15.74	29.91	
1.1.7. RENDEZVOUS & DOCKING	26.23	4.21	8.00	
1.1.7.1. RENDEZVOUS (AVIONICS)	20.52	3.46	6.58	
1.1.7.2. DOCKING (MECHANICAL)	5.61	.75	1.42	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		9.15	17.39	
1.1.9. PROGRAM MANAGEMENT	11.23	6.10	11.59	
1.1.10. SYSTEMS ENGRG & INTEGRATION	26.55	6.41	12.17	
1.1.11. SYSTEMS TEST ARTICLE	65.42			
1.1.12. SYSTEM TEST OPERATIONS	21.14			
1.1.13. GSE	15.19			
1.1.14. FSE				
1.1.15. FACILITIES	11.24			

Table 1-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE, UNITS PRODUCED 8.00 4.00

11.41.30. 01/21/80

ITEM 69 BUS TYPE 49KB CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	220.82	72.60	262.10	482.91
1.1.1. STRUCTURE	25.78	3.06	13.22	
1.1.1.1. STRUCTURE (PRIMARY)	7.06	3.16	11.41	
1.1.1.2. STRUCTURE (SECONDARY)	7.10	.50	1.81	
1.1.1.3. STRUCTURE (TOOLING)	1.62			
1.1.2. THERMAL CONTROL	3.31	.66	2.38	
1.1.3. ATTITUDE CONTROL	26.50	6.07	21.92	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	25.19	4.54	16.36	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.42	1.53	5.53	
1.1.4. REACTION CONTROL	17.39	7.45	26.89	
1.1.5. ELECTRICAL POWER	28.05	27.82	100.44	
1.1.5.1. SOLAR ARRAY	12.76	19.66	70.97	
1.1.5.2. BATTERIES	.35	2.52	9.10	
1.1.5.3. POWER COND & DIST	14.93	5.64	20.37	
1.1.6. TT&C	9.33	11.06	39.92	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		6.81	24.57	
1.1.9. PROGRAM MANAGEMENT	7.44	4.54	16.38	
1.1.10. SYSTEMS ENGRG & INTEGRATION	15.98	4.54	16.38	
1.1.11. SYSTEMS TEST ARTICLE	63.53			
1.1.12. SYSTEM TEST OPERATIONS	14.29			
1.1.13. GSE	10.05			
1.1.14. PSE				
1.1.15. FACILITIES	9.06			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 10.00 2.00

12.75.31. 01/21/80

ITEM 70 80S TYPE 49KE CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	302.55	84.98	161.47	464.02
1.1.1. STRUCTURE	15.81	3.67	6.67	
1.1.1.1. STRUCTURE (PRIMARY)	7.07	3.17	6.02	
1.1.1.2. STRUCTURE (SECONDARY)	7.12	.50	.96	
1.1.1.3. STRUCTURE (TOOLING)	1.62			
1.1.2. THERMAL CONTROL	3.60	.71	1.35	
1.1.3. ATTITUDE CONTROL	33.64	7.21	13.71	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	31.38	5.53	10.51	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.77	1.66	3.19	
1.1.4. REACTION CONTROL	16.22	3.70	7.03	
1.1.5. ELECTRICAL POWER	36.12	32.33	61.42	
1.1.5.1. SOLAR ARRAY	16.82	23.19	44.07	
1.1.5.2. BATTERIES	.44	2.86	5.44	
1.1.5.3. POWER COND & DIST	18.86	6.27	11.92	
1.1.6. TT&C	11.91	13.75	26.13	
1.1.7. RENDEZVOUS & DOCKING	30.00	4.81	9.14	
1.1.7.1. RENDEZVOUS (AVIONICS)	20.46	3.30	6.27	
1.1.7.2. DOCKING (MECHANICAL)	9.53	1.51	2.87	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		7.94	15.09	
1.1.9. PROGRAM MANAGEMENT	11.03	5.29	10.06	
1.1.10. SYSTEMS ENGRG & INTEGRATION	26.06	5.56	10.56	
1.1.11. SYSTEMS TEST ARTICLE	74.13			
1.1.12. SYSTEM TEST OPERATIONS	18.35			
1.1.13. GSE	14.91			
1.1.14. FSE				
1.1.15. FACILITIES	9.95			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 8.00 2.00

11.41.30. 01/21/80

ITEM 71 BUS TYPE 50MB CASE IV

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	309.65	116.92	225.95	535.59
1.1.1. STRUCTURE	19.77	5.28	10.04	
1.1.1.1. STRUCTURE (PRIMARY)	7.82	4.56	8.66	
1.1.1.2. STRUCTURE (SECONDARY)	9.35	.72	1.37	
1.1.1.3. STRUCTURE (TOOLING)	2.60			
1.1.2. THERMAL CONTROL	3.71	.90	1.72	
1.1.3. ATTITUDE CONTROL	28.17	8.99	17.07	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	26.75	7.45	14.16	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.42	1.53	2.91	
1.1.4. REACTION CONTROL	19.35	12.02	22.83	
1.1.5. ELECTRICAL POWER	44.10	46.04	91.27	
1.1.5.1. SOLAR ARRAY	19.08	33.27	63.22	
1.1.5.2. BATTERIES	.36	4.72	8.96	
1.1.5.3. POWER COND & DIST	24.66	10.05	19.09	
1.1.6. TT&C	10.11	17.68	33.59	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		11.15	21.18	
1.1.9. PROGRAM MANAGEMENT	9.27	7.43	14.12	
1.1.10. SYSTEMS ENGRG & INTEGRATION	19.91	7.43	14.12	
1.1.11. SYSTEMS TEST ARTICLE	104.05			
1.1.12. SYSTEM TEST OPERATIONS	23.41			
1.1.13. GSE	12.52			
1.1.14. PSE				
1.1.15. FACILITIES	15.28			

Table I-2. Nominal Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 16.00 1.00

12.25.31. 01/21/80

ITEM 72 BUS TYPE SOME CASE 1V

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	406.91	136.70	136.70	543.60
1.1.1. STRUCTURE	10.73	5.25	5.25	
1.1.1.1. STRUCTURE (PRIMARY)	7.05	4.64	4.64	
1.1.1.2. STRUCTURE (SECONDARY)	1.20	.01	.01	
1.1.1.3. STRUCTURE (TOOLING)	2.66			
1.1.2. THERMAL CONTROL	3.81	.98	.98	
1.1.3. ATTITUDE CONTROL	16.03	10.87	10.87	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	13.80	8.96	8.96	
1.1.3.2. ATTITUDE CONTROL (AMCD)	2.23	1.91	1.91	
1.1.4. REACTION CONTROL	20.20	5.89	5.89	
1.1.5. ELECTRICAL POWER	56.46	55.38	55.38	
1.1.5.1. SOLAR ARRAY	25.03	38.98	38.98	
1.1.5.2. BATTERIES	.45	5.28	5.28	
1.1.5.3. POWER COND & DIST	31.00	11.13	11.13	
1.1.6. TT&C	22.90	22.01	22.01	
1.1.7. RENDEZVOUS & DOCKING	32.19	6.07	6.07	
1.1.7.1. RENDEZVOUS (AVIONICS)	21.29	4.26	4.26	
1.1.7.2. DOCKING (MECHANICAL)	10.90	1.81	1.81	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		12.78	12.78	
1.1.9. PROGRAM MANAGEMENT	13.35	8.52	8.52	
1.1.10. SYSTEMS ENGRG & INTEGRATION	31.54	8.94	8.94	
1.1.11. SYSTEMS TEST ARTICLE	119.24			
1.1.12. SYSTEM TEST OPERATIONS	27.51			
1.1.13. GSE	11.03			
1.1.14. PSE				
1.1.15. FACILITIES	14.80			

Table I-3. High Traffic Model Cost Runs

[illegible] UNITS PRODUCED 10.00 34.90

12.25.31. 01/21/80

ITEM 73 BUS TYPE 6080 CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	198.20	39.87	1044.11	1242.31
1.1.1. STRUCTURE	9.82	1.55	40.55	
1.1.1.1. STRUCTURE (PRIMARY)	5.56	1.34	35.00	
1.1.1.2. STRUCTURE (SECONDARY)	3.72	.21	5.55	
1.1.1.3. STRUCTURE (TOOLING)	.53			
1.1.2. THERMAL CONTROL	2.93	.47	12.35	
1.1.3. ATTITUDE CONTROL	30.71	4.30	112.66	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	29.54	2.96	77.58	
1.1.3.2. ATTITUDE CONTROL (AMCO)	1.17	1.34	35.08	
1.1.4. REACTION CONTROL	19.05	3.55	93.02	
1.1.5. ELECTRICAL POWER	15.84	11.77	308.14	
1.1.5.1. SOLAR ARRAY	7.95	8.71	228.03	
1.1.5.2. BATTERIES	.40	.89	23.42	
1.1.5.3. POWER COND & DIST	7.49	2.16	56.70	
1.1.6. TT&C	10.44	6.35	166.28	
1.1.7. RENDEZVOUS & DOCKING	24.29	3.06	80.25	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.57	2.47	64.75	
1.1.7.2. DOCKING (MECHANICAL)	4.72	.59	15.50	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		3.73	97.58	
1.1.9. PROGRAM MANAGEMENT	8.29	2.48	65.05	
1.1.10. SYSTEMS ENGRG & INTEGRATION	19.60	2.61	68.31	
1.1.11. SYSTEMS TEST ARTICLE	34.77			
1.1.12. SYSTEM TEST OPERATIONS	8.61			
1.1.13. GSE	11.21			
1.1.14. PSE				
1.1.15. FACILITIES	3.63			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE UNITS PRODUCED 10.00 33.33

12.25.31. 01/21/80

ITEM 74 BUS TYPE 610C CASE 11

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	ROTGE PHASE COST	FIRST UNIT COST	PROD PHASE COST	ROTGE PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	176.76	43.18	1099.97	1276.74
1.1.1. STRUCTURE	9.93	1.58	40.34	
1.1.1.1. STRUCTURE (PRIMARY)	5.59	1.37	34.82	
1.1.1.2. STRUCTURE (SECONDARY)	3.79	.22	5.52	
1.1.1.3. STRUCTURE (TOOLING)	.55			
1.1.2. THERMAL CONTROL	2.94	.47	12.10	
1.1.3. ATTITUDE CONTROL	31.75	5.20	132.50	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	30.41	3.75	95.57	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.35	1.45	36.93	
1.1.4. REACTION CONTROL	21.77	8.23	209.75	
1.1.5. ELECTRICAL POWER	15.68	11.71	298.40	
1.1.5.1. SOLAR ARRAY	7.95	8.71	221.81	
1.1.5.2. BATTERIES	.40	.89	22.70	
1.1.5.3. POWER COND & DIST	7.33	2.11	53.81	
1.1.6. TT&C	10.46	6.42	163.59	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		4.04	102.80	
1.1.9. PROGRAM MANAGEMENT	6.85	2.69	68.53	
1.1.10. SYSTEMS ENGRG & INTEGRATION	16.18	2.82	71.96	
1.1.11. SYSTEMS TEST ARTICLE	37.66			
1.1.12. SYSTEM TEST OPERATIONS	9.32			
1.1.13. GSE	9.25			
1.1.14. FSF				
1.1.15. FACILITIES	4.97			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LEVEL UNITS PRODUCED 78.00 28.30

12.25.31. 01/21/80

ITEM 75 BUS TYPE 02CC1 CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	ROTEE PHASE COST	FIRST UNIT COST	PROD PHASE COST	ROTEE PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	206.83	43.40	886.71	1093.55
1.1.1. STRUCTURE	10.52	1.77	36.14	
1.1.1.1. STRUCTURE (PRIMARY)	5.77	1.53	31.19	
1.1.1.2. STRUCTURE (SECONDARY)	4.12	.24	4.96	
1.1.1.3. STRUCTURE (TOOLING)	.63			
1.1.2. THERMAL CONTROL	2.99	.50	10.13	
1.1.3. ATTITUDE CONTROL	31.16	4.60	95.29	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	29.91	3.28	66.93	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.25	1.39	28.36	
1.1.4. REACTION CONTROL	18.58	4.04	82.53	
1.1.5. ELECTRICAL POWER	16.92	12.69	259.16	
1.1.5.1. SOLAR ARRAY	7.38	9.32	190.39	
1.1.5.2. BATTERIES	.40	.98	20.10	
1.1.5.3. POWER COND & DIST	9.14	2.38	48.67	
1.1.6. TTEC	10.61	7.00	143.62	
1.1.7. RENDEZVOUS & DOCKING	24.45	3.15	64.32	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.66	2.54	51.97	
1.1.7.2. DOCKING (MECHANICAL)	4.79	.60	12.34	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		4.06	82.87	
1.1.9. PROGRAM MANAGEMENT	8.53	2.70	55.25	
1.1.10. SYSTEMS ENGRG & INTEGRATION	20.15	2.44	50.01	
1.1.11. SYSTEMS TEST ARTICLE	37.86			
1.1.12. SYSTEM TEST OPERATIONS	9.37			
1.1.13. GSE	11.52			
1.1.14. PSE				
1.1.15. FACILITIES	4.18			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE UNITS PRODUCED 10.00 20.00

12.25.31. 01/21/80

ITEM 76 BUS TYPE 763DC1 CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	220.53	49.36	790.87	1011.40
1.1.1. STRUCTURE	11.17	1.98	31.75	
1.1.1.1. STRUCTURE (PRIMARY)	5.95	1.71	27.40	
1.1.1.2. STRUCTURE (SECONDARY)	4.48	.27	4.35	
1.1.1.3. STRUCTURE (TOOLING)	.73			
1.1.2. THERMAL CONTROL	3.04	.52	8.32	
1.1.3. ATTITUDE CONTROL	31.65	5.11	81.84	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	30.32	3.67	58.80	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.33	1.44	23.04	
1.1.4. REACTION CONTROL	19.12	4.60	73.70	
1.1.5. ELECTRICAL POWER	19.72	15.29	245.06	
1.1.5.1. SOLAR ARRAY	9.59	11.12	178.15	
1.1.5.2. BATTERIES	.41	1.25	20.06	
1.1.5.3. POWER COND & DIST	9.73	2.92	46.85	
1.1.6. TT&C	10.79	7.71	123.47	
1.1.7. RENDEZVOUS & DOCKING	24.61	3.23	51.79	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.74	2.62	41.91	
1.1.7.2. DOCKING (MECHANICAL)	4.87	.62	9.88	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		4.61	73.91	
1.1.9. PROGRAM MANAGEMENT	8.89	3.08	49.28	
1.1.10. SYSTEMS ENGRG & INTEGRATION	21.01	3.23	51.74	
1.1.11. SYSTEMS TEST ARTICLE	43.05			
1.1.12. SYSTEM TEST OPERATIONS	10.66			
1.1.13. GSE	12.01			
1.1.14. FSE				
1.1.15. FACILITIES	4.81			

Table I-3. High Traffic Model Cost Runs, Contd

SPACE CAT I UNITS PRODUCED 18.00 14.00

12.25.31. 01/21/80

ITEM 77 BUS TYPE 640C, CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	254.47	64.75	745.65	1000.12
1.1.1. STRUCTURE	12.55	2.46	28.28	
1.1.1.1. STRUCTURE (PRIMARY)	6.32	2.12	24.40	
1.1.1.2. STRUCTURE (SECONDARY)	5.27	.34	3.86	
1.1.1.3. STRUCTURE (TOOLING)	.97			
1.1.2. THERMAL CONTROL	3.15	.58	6.64	
1.1.3. ATTITUDE CONTROL	32.68	6.15	70.82	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	31.18	4.61	53.07	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.51	1.54	17.75	
1.1.4. REACTION CONTROL	20.22	5.92	66.14	
1.1.5. ELECTRICAL POWER	26.99	22.48	258.93	
1.1.5.1. SOLAR ARRAY	12.81	16.25	187.11	
1.1.5.2. BATTERIES	.42	1.88	21.63	
1.1.5.3. POWER COND & DIST	13.75	4.36	50.20	
1.1.6. TT&C	11.17	9.42	108.47	
1.1.7. RENDEZVOUS & DOCKING	24.45	3.42	39.43	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.93	2.78	32.04	
1.1.7.2. DOCKING (MECHANICAL)	5.02	.64	7.39	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		6.05	69.69	
1.1.9. PROGRAM MANAGEMENT	9.75	4.03	46.46	
1.1.10. SYSTEMS ENGRG & INTEGRATION	23.04	4.24	48.78	
1.1.11. SYSTEMS TEST ARTICLE	56.48			
1.1.12. SYSTEM TEST OPERATIONS	13.98			
1.1.13. GSE	13.17			
1.1.14. FSE				
1.1.15. FACILITIES	6.34			

Table I-3. High Traffic Model Cost Runs, Contd

12.25.31. 01/21/80

ITEM 78 BUS TYPE 65LC CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	269.67	87.67	875.35	1145.02
1.1.1. STRUCTURE	14.48	3.66	36.74	
1.1.1.1. STRUCTURE (PRIMARY)	7.16	3.31	33.09	
1.1.1.2. STRUCTURE (SECONDARY)	5.60	.37	3.64	
1.1.1.3. STRUCTURE (TOOLING)	1.72			
1.1.2. THERMAL CONTROL	3.22	.61	6.09	
1.1.3. ATTITUDE CONTROL	35.06	9.35	93.38	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	33.12	7.58	75.69	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.94	1.77	17.69	
1.1.4. REACTION CONTROL	25.60	17.07	170.45	
1.1.5. ELECTRICAL POWER	31.28	27.06	270.23	
1.1.5.1. SOLAR ARRAY	14.74	19.51	194.76	
1.1.5.2. BATTERIES	.43	2.33	23.22	
1.1.5.3. POWER COND & DIST	16.11	5.23	52.25	
1.1.6. TT&C	11.38	10.50	104.86	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		8.19	81.81	
1.1.9. PROGRAM MANAGEMENT	8.96	5.46	54.54	
1.1.10. SYSTEMS ENGRG & INTEGRATION	21.17	5.74	57.27	
1.1.11. SYSTEMS TEST ARTICLE	76.47			
1.1.12. SYSTEM TEST OPERATIONS	18.93			
1.1.13. GSE	12.10			
1.1.14. FSE				
1.1.15. FACILITIES	11.03			

Table I-3. High Traffic Model Cost Runs, Contd

12.25.31. 01/21/80

ITEM 79 BUS TYPE 66LC' CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	331.48	101.62	615.93	947.41
1.1.1. STRUCTURE	15.89	4.18	25.33	
1.1.1.1. STRUCTURE (PRIMARY)	7.40	3.74	22.64	
1.1.1.2. STRUCTURE (SECONDARY)	6.48	.44	2.69	
1.1.1.3. STRUCTURE (TOOLING)	2.01			
1.1.2. THERMAL CONTROL	3.40	.71	4.29	
1.1.3. ATTITUDE CONTROL	34.83	6.99	54.49	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	32.93	7.24	43.88	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.90	1.75	10.61	
1.1.4. REACTION CONTROL	22.41	9.39	56.92	
1.1.5. ELECTRICAL POWER	41.80	38.39	232.66	
1.1.5.1. SOLAR ARRAY	19.05	27.28	165.36	
1.1.5.2. BATTERIES	.44	3.49	21.14	
1.1.5.3. POWER COND & DIST	22.31	7.62	46.16	
1.1.6. TTEC	11.89	13.58	82.28	
1.1.7. RENDEZVOUS & DOCKING	25.77	3.91	23.72	
1.1.7.1. RENDEZVOUS (AVIONICS)	20.37	3.21	19.44	
1.1.7.2. DOCKING (MECHANICAL)	5.39	.71	4.28	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		9.50	57.56	
1.1.9. PROGRAM MANAGEMENT	11.54	6.33	38.38	
1.1.10. SYSTEMS ENGRG & INTEGRATION	27.28	6.65	40.29	
1.1.11. SYSTEMS TEST ARTICLE	89.64			
1.1.12. SYSTEM TEST OPERATIONS	21.94			
1.1.13. GSE	15.60			
1.1.14. FSF				
1.1.15. FACILITIES	10.50			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIF , UNITS PRODUCED [illegible]

12.25.31. 01/21/80

ITEM 80 BVS TYPE 67MC CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	348.21	128.78	676.71	1024.92
1.1.1. STRUCTURE	15.61	3.54	18.66	
1.1.1.1. STRUCTURE (PRIMARY)	7.03	3.10	16.29	
1.1.1.2. STRUCTURE (SECONDARY)	7.00	.49	2.59	
1.1.1.3. STRUCTURE (TOOLING)	1.58			
1.1.2. THERMAL CONTROL	3.50	.77	4.05	
1.1.3. ATTITUDE CONTROL	36.85	12.69	66.70	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	34.56	10.75	56.50	
1.1.3.2. ATTITUDE CONTROL (AMCD)	2.29	1.94	10.20	
1.1.4. REACTION CONTROL	27.56	23.80	125.05	
1.1.5. ELECTRICAL POWER	46.85	44.08	231.61	
1.1.5.1. SOLAR ARRAY	21.14	31.27	164.30	
1.1.5.2. BATTERIES	.45	4.02	21.15	
1.1.5.3. POWER COND & DIST	25.26	8.79	46.17	
1.1.6. TT&C	12.14	15.36	80.73	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		12.04	63.24	
1.1.9. PROGRAM MANAGEMENT	10.55	8.02	42.16	
1.1.10. SYSTEMS ENGRG & INTEGRATION	24.92	8.42	44.27	
1.1.11. SYSTEMS TEST ARTICLE	112.33			
1.1.12. SYSTEM TEST OPERATIONS	27.80			
1.1.13. GSE	14.25			
1.1.14. FSE				
1.1.15. FACILITIES	15.85			

Table I-3. High Traffic Model Cost Runs, Contd

[illegible] UNITS PRODUCED 8.55 12.00

11.41.30. 01/21/80

ITEM 81 BUS TYPE 68L8 CASE 111

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	264.81	94.60	946.49	1211.30
1.1.1. STRUCTURE	17.35	4.72	47.14	
1.1.1.1. STRUCTURE (PRIMARY)	7.64	4.19	41.88	
1.1.1.2. STRUCTURE (SECONDARY)	7.37	.53	5.26	
1.1.1.3. STRUCTURE (TOOLING)	2.33			
1.1.2. THERMAL CONTROL	3.36	.69	6.87	
1.1.3. ATTITUDE CONTROL	27.30	7.06	70.45	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	25.75	5.45	54.37	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.55	1.61	16.08	
1.1.4. REACTION CONTROL	18.10	6.91	68.95	
1.1.5. ELECTRICAL POWER	38.62	40.92	408.54	
1.1.5.1. SOLAR ARRAY	16.91	28.42	283.79	
1.1.5.2. BATTERIES	.36	3.98	39.77	
1.1.5.3. POWER COND & DIST	21.35	8.51	84.97	
1.1.6. TT&C	9.43	11.77	117.50	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		8.89	88.73	
1.1.9. PROGRAM MANAGEMENT	8.45	5.92	59.16	
1.1.10. SYSTEMS ENGRG & INTEGRATION	18.15	5.92	59.16	
1.1.11. SYSTEMS TEST ARTICLE	82.95			
1.1.12. SYSTEM TEST OPERATIONS	18.66			
1.1.13. GSE	11.42			
1.1.14. FSE				
1.1.15. FACILITIES	11.02			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE UNITS PRODUCED 10.00 4.00

12.37.51. 01/21/80

ITEM 02 BUS TYPE 69MC* CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1960$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	443.80	159.33	575.19	1018.98
1.1.1. STRUCTURE	18.15	4.61	16.64	
1.1.1.1. STRUCTURE (PRIMARY)	7.53	3.98	14.36	
1.1.1.2. STRUCTURE (SECONDARY)	8.44	.63	2.28	
1.1.1.3. STRUCTURE (TOOLING)	2.18			
1.1.2. THERMAL CONTROL	3.78	.95	3.44	
1.1.3. ATTITUDE CONTROL	36.98	12.98	46.84	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	34.66	11.02	39.79	
1.1.3.2. ATTITUDE CONTROL (AMCD)	2.32	1.95	7.05	
1.1.4. REACTION CONTROL	24.49	13.99	50.50	
1.1.5. ELECTRICAL POWER	64.96	65.59	236.76	
1.1.5.1. SOLAR ARRAY	28.39	45.98	165.98	
1.1.5.2. BATTERIES	.46	6.35	22.92	
1.1.5.3. POWER COND & DIST	36.11	13.26	47.88	
1.1.6. TT&C	12.80	21.06	76.01	
1.1.7. RENDEZVOUS & DOCKING	27.26	4.92	17.75	
1.1.7.1. RENDEZVOUS (AVIONICS)	21.15	4.08	14.74	
1.1.7.2. DOCKING (MECHANICAL)	6.11	.83	3.01	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		14.69	53.76	
1.1.9. PROGRAM MANAGEMENT	13.94	9.93	35.84	
1.1.10. SYSTEMS ENGRG & INTEGRATION	32.95	10.42	37.63	
1.1.11. SYSTEMS TEST ARTICLE	138.98			
1.1.12. SYSTEM TEST OPERATIONS	34.40			
1.1.13. GSE	18.84			
1.1.14. FSE				
1.1.15. FACILITIES	16.26			

Table I-3. High Traffic Model Cost Runs, Contd

[illegible] 6.00 6.30

11.41.30. 01/21/80

ITEM 83 BUS TYPE 70MB CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	362.35	147.08	772.89	1135.25
1.1.1. STRUCTURE	19.77	5.28	27.75	
1.1.1.1. STRUCTURE (PRIMARY)	7.82	4.56	23.95	
1.1.1.2. STRUCTURE (SECONDARY)	9.35	.72	3.80	
1.1.1.3. STRUCTURE (TOOLING)	2.60			
1.1.2. THERMAL CONTROL	3.71	.90	4.75	
1.1.3. ATTITUDE CONTROL	28.83	9.76	51.29	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	26.97	7.98	41.94	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.86	1.78	9.35	
1.1.4. REACTION CONTROL	19.62	12.81	67.31	
1.1.5. ELECTRICAL POWER	59.24	68.52	360.08	
1.1.5.1. SOLAR ARRAY	24.75	46.76	245.73	
1.1.5.2. BATTERIES	.38	7.15	37.60	
1.1.5.3. POWER COND & DIST	34.11	14.60	76.75	
1.1.6. TT&C	10.10	17.63	92.65	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		13.79	72.46	
1.1.9. PROGRAM MANAGEMENT	10.45	9.19	48.31	
1.1.10. SYSTEMS ENGRG & INTEGRATION	22.46	9.19	48.31	
1.1.11. SYSTEMS TEST ARTICLE	128.69			
1.1.12. SYSTEM TEST OPERATIONS	28.96			
1.1.13. GSE	14.13			
1.1.14. FSE				
1.1.15. FACILITIES	16.39			

Table I-3. High Traffic Model Cost Runs, Contd

[illegible] UNITS PRODUCED 10.00 3.00

12.37.51. 01/21/89

ITEM 84 BUS TYPE 7ONE CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	470.80	108.33	465.57	936.37
1.1.1. STRUCTURE	19.90	5.30	14.65	
1.1.1.1. STRUCTURE (PRIMARY)	7.83	4.57	12.64	
1.1.1.2. STRUCTURE (SECONDARY)	9.37	.73	2.01	
1.1.1.3. STRUCTURE (TOOLING)	2.61			
1.1.2. THERMAL CONTROL	3.81	.98	2.71	
1.1.3. ATTITUDE CONTROL	36.39	11.53	31.86	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	34.07	9.57	26.46	
1.1.3.2. ATTITUDE CONTROL (AMCD)	2.32	1.95	5.40	
1.1.4. REACTION CONTROL	20.49	6.27	17.34	
1.1.5. ELECTRICAL POWER	75.84	79.03	218.57	
1.1.5.1. SOLAR ARRAY	32.57	55.02	152.18	
1.1.5.2. BATTERIES	.47	7.87	21.77	
1.1.5.3. POWER COND & DIST	42.80	16.14	44.63	
1.1.6. TT&C	12.89	21.94	60.68	
1.1.7. RENDEZVOUS & DOCKING	32.18	6.07	16.78	
1.1.7.1. RENDEZVOUS (AVIONICS)	21.29	4.26	11.78	
1.1.7.2. DOCKING (MECHANICAL)	10.90	1.81	5.00	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		15.73	43.51	
1.1.9. PROGRAM MANAGEMENT	14.90	10.49	29.01	
1.1.10. SYSTEMS ENGRG & INTEGRATION	39.23	11.01	30.46	
1.1.11. SYSTEMS TEST ARTICLE	146.83			
1.1.12. SYSTEM TEST OPERATIONS	36.34			
1.1.13. GSE	20.14			
1.1.14. PSE				
1.1.15. FACILITIES	15.94			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 16.00 225.00

13.39.50. 01/25/80

ITEM 85 BUS TYPE 72AC CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	124.88	21.34	3215.88	3340.76
1.1.1. STRUCTURE	6.78	.72	107.99	
1.1.1.1. STRUCTURE (PRIMARY)	4.48	.62	93.15	
1.1.1.2. STRUCTURE (SECONDARY)	2.10	.10	14.84	
1.1.1.3. STRUCTURE (TOOLING)	.20			
1.1.2. THERMAL CONTROL	2.75	.39	59.28	
1.1.3. ATTITUDE CONTROL	29.13	3.20	481.98	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	28.23	2.04	307.01	
1.1.3.2. ATTITUDE CONTROL (AMCD)	.90	1.16	174.97	
1.1.4. REACTION CONTROL	18.19	3.68	554.37	
1.1.5. ELECTRICAL POWER	7.29	4.45	671.14	
1.1.5.1. SOLAR ARRAY	3.89	3.42	515.71	
1.1.5.2. BATTERIES	.36	.27	40.43	
1.1.5.3. POWER COND & DIST	3.03	.76	115.00	
1.1.6. TT&C	9.70	4.18	629.82	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		1.99	300.55	
1.1.9. PROGRAM MANAGEMENT	5.46	1.33	200.37	
1.1.10. SYSTEMS ENGRG & INTEGRATION	12.91	1.40	210.38	
1.1.11. SYSTEMS TEST ARTICLE	16.61			
1.1.12. SYSTEM TEST OPERATIONS	4.61			
1.1.13. GSE	7.38			
1.1.14. PSE				
1.1.15. FACILITIES	2.06			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE) UNITS PRODUCED 10.00 163.00

ITEM 86 BUS TYPE 730C CASE II 13.39.4e. 01/25/80

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	135.46	29.31	2830.49	2965.95
1.1.1. STRUCTURE				
1.1.1.1. STRUCTURE (PRIMAR .	7.93	1.17	330.80	
1.1.1.2. STRUCTURE (SECONDARY)	5.21	1.06	110.19	
1.1.1.3. STRUCTURE (TOOLING)	2.33	.11	12.69	
1.1.2. THERMAL CONTROL	.39			
1.1.3. ATTITUDE CONTROL	2.77	.46	44.96	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	29.76	3.61	404.02	
1.1.3.2. ATTITUDE CONTROL (ARCD)	28.76	2.38	265.72	
1.1.4. REACTION CONTROL	1.01	1.24	138.30	
1.1.5. ELECTRICAL POWER	19.15	4.63	517.99	
1.1.5.1. SOLAR ARRAY	8.61			
1.1.5.2. BATTERIES	4.50	5.47	611.12	
1.1.5.3. POWER COND & DIST	.37	4.14	462.53	
1.1.6. TT&C	3.74	.36	40.60	
1.1.7. RENDEZVOUS & DOCKING	9.80	.97	109.99	
1.1.7.1. RENDEZVOUS (AVIONICS)		9.43	495.45	
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O				
1.1.9. PROGRAM MANAGEMENT		2.37	264.53	
1.1.10. SYSTEMS ENGRG & INTEGRATION	5.77	1.58	176.35	
1.1.11. SYSTEMS TEST ARTICLE	13.65	1.66	185.17	
1.1.12. SYSTEM TEST OPERATIONS	22.68			
1.1.13. GSE	5.47			
1.1.14. FSE	7.80			
1.1.15. FACILITIES	2.65			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 10.00 145.00

13.39.58. 01/25/80

ITEM 87 BUS TYPE 74AC* CASE 11

GEOSTATIONARY PLATFORM PROGRAM COSTS ($1980M)

	ADTCE PHASE COST	FIRST UNIT COST	PROD PHASE COST	ADTCE PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	171.41	29.19	2928.35	3099.76
1.1.1. STRUCTURE	7.56	.91	91.55	
1.1.1.1. STRUCTURE (PRIMARY)	4.80	.79	79.06	
1.1.1.2. STRUCTURE (SECONDARY)	2.50	.12	12.49	
1.1.1.3. STRUCTURE (TOOLING)	.27			
1.1.2. THERMAL CONTROL	2.78	.41	40.89	
1.1.3. ATTITUDE CONTROL	29.30	3.31	331.62	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	28.37	2.12	212.94	
1.1.3.2. ATTITUDE CONTROL (AMCD)	.93	1.18	118.68	
1.1.4. REACTION CONTROL	16.30	2.24	225.23	
1.1.5. ELECTRICAL POWER	12.16	8.36	838.84	
1.1.5.1. SOLAR ARRAY	6.11	6.17	618.85	
1.1.5.2. BATTERIES	.39	.63	62.81	
1.1.5.3. POWER COND & DIST	5.66	1.57	157.18	
1.1.6. TT&C	9.88	4.63	464.79	
1.1.7. RENDEZVOUS & DOCKING	23.91	2.87	287.74	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.36	2.30	231.17	
1.1.7.2. DOCKING (MECHANICAL)	4.55	.56	56.57	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		2.73	273.68	
1.1.9. PROGRAM MANAGEMENT	7.54	1.82	182.45	
1.1.10. SYSTEMS ENGRG & INTEGRATION	17.82	1.91	191.57	
1.1.11. SYSTEMS TEST ARTICLE	25.46			
1.1.12. SYSTEM TEST OPERATIONS	6.30			
1.1.13. GSE	10.19			
1.1.14. FSE				
1.1.15. FACILITIES	2.23			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 16.0(121.0

13.39.58. 01/25/80

ITEM 88 BUS TYPE 75PC CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDTEE PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDTEE PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	154.45	33.15	2812.77	2967.23
1.1.1. STRUCTURE	9.29	1.79	191.74	
1.1.1.1. STRUCTURE (PRIMARY)	5.89	1.65	140.04	
1.1.1.2. STRUCTURE (SECONDARY)	2.70	.14	11.70	
1.1.1.3. STRUCTURE (TOOLING)	.70			
1.1.2. THERMAL CONTROL	2.00	.42	35.32	
1.1.3. ATTITUDE CONTROL	30.74	4.32	366.80	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	29.56	2.98	252.74	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.18	1.35	114.14	
1.1.4. REACTION CONTROL	20.48	6.26	531.60	
1.1.5. ELECTRICAL POWER	11.74	8.14	690.74	
1.1.5.1. SOLAR ARRAY	6.11	6.17	523.38	
1.1.5.2. BATTERIES	.38	.54	45.53	
1.1.5.3. POWER COND & DIST	5.25	1.44	121.83	
1.1.6. TT&C	9.97	4.88	414.40	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		3.10	262.80	
1.1.9. PROGRAM MANAGEMENT	6.29	2.07	179.25	
1.1.10. SYSTEMS ENGRG & INTEGRATION	14.87	2.17	184.01	
1.1.11. SYSTEMS TEST ARTICLE	28.92			
1.1.12. SYSTEM TEST OPERATIONS	7.16			
1.1.13. GSE	8.50			
1.1.14. FSE				
1.1.15. FACILITIES	3.68			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 10.00 90.00

13.39.58. 01/25/80

ITEM 69 BUS TYPE 76AE CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDTEE PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDTEE PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	175.48	29.26	1984.32	2159.79
1.1.1. STRUCTURE	11.42	2.06	139.93	
1.1.1.1. STRUCTURE (PRIMARY)	6.62	1.78	120.73	
1.1.1.2. STRUCTURE (SECONDARY)	4.62	.28	19.19	
1.1.1.3. STRUCTURE (TOOLING)	.77			
1.1.2. THERMAL CONTROL	2.72	.38	26.07	
1.1.3. ATTITUDE CONTROL	29.29	3.30	223.77	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	28.29	2.07	140.48	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.00	1.23	83.29	
1.1.4. REACTION CONTROL	14.12	1.18	79.93	
1.1.5. ELECTRICAL POWER	12.03	8.32	564.31	
1.1.5.1. SOLAR ARRAY	6.11	6.17	418.34	
1.1.5.2. BATTERIES	.39	.63	42.46	
1.1.5.3. POWER COND & DIST	5.53	1.53	103.51	
1.1.6. TT&C	9.80	4.43	300.53	
1.1.7. RENDEZVOUS & DOCKING	25.20	3.11	210.88	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.39	2.33	157.90	
1.1.7.2. DOCKING (MECHANICAL)	5.81	.78	52.97	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		2.73	184.45	
1.1.9. PROGRAM MANAGEMENT	7.74	1.82	123.63	
1.1.10. SYSTEMS ENGRG & INTEGRATION	18.29	1.91	129.82	
1.1.11. SYSTEMS TEST ARTICLE	25.52			
1.1.12, SYSTEM TEST OPERATIONS	6.32			
1.1.13. GSE	10.46			
1.1.14. PSE				
1.1.15. FACILITIES	2.57			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 10.0[illegible] 90.0[illegible]

13.39.58. 01/25/90

ITEM 90 BUS TYPE 77PC CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	ROTEE PHASE COST	FIRST UNIT COST	PROD PHASE COST	ROTEE PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	157.89	34.57	2230.20	2388.08
1.1.1. STRUCTURE	9.63	1.89	121.61	
1.1.1.1. STRUCTURE (PRIMARY)	5.97	1.73	111.79	
1.1.1.2. STRUCTURE (SECONDARY)	2.90	.15	9.82	
1.1.1.3. STRUCTURE (TOOLING)	.75			
1.1.2. THERMAL CONTROL	2.62	.42	27.41	
1.1.3. ATTITUDE CONTROL	31.00	4.53	292.30	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	29.78	3.16	203.89	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.22	1.37	88.41	
1.1.4. REACTION CONTROL	20.80	6.71	432.78	
1.1.5. ELECTRICAL POWER	11.93	6.29	534.71	
1.1.5.1. SOLAR ARRAY	6.11	6.17	397.91	
1.1.5.2. BATTERIES	.39	.63	40.38	
1.1.5.3. POWER COND & DIST	5.43	1.49	96.42	
1.1.6. TTEC	10.04	5.09	328.1[illegible]	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		3.23	2[illegible]8.43	
1.1.9. PROGRAM MANAGEMENT	6.38	2.15	138.95	
1.1.10. SYSTEMS ENGRG & INTEGRATION	15.[illegible]8	2.26	145.90	
1.1.11. SYSTEMS TEST ARTICLE	3[illegible].16			
1.1.12. SYSTEM TEST OPERATIONS	7.46			
1.1.13. GSE	8.62			
1.1.14. FSE				
1.1.15. FACILITIES	3.97			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 10.00 67.00

13.39.58. 01/25/80

ITEM 91 BUS TYPE 780C, CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDTEE PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDTEE PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	180.81	32.69	2643.57	2224.39
1.1.1. STRUCTURE	8.94	1.43	89.53	
1.1.1.1. STRUCTURE (PRIMARY)	5.49	1.28	79.84	
1.1.1.2. STRUCTURE (SECONDARY)	2.94	.15	9.69	
1.1.1.3. STRUCTURE (TOOLING)	.50			
1.1.2. THERMAL CONTROL	2.83	.43	26.78	
1.1.3. ATTITUDE CONTROL	29.90	3.70	231.12	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	28.86	2.44	152.79	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.04	1.25	78.33	
1.1.4. REACTION CONTROL	17.10	2.79	174.15	
1.1.5. ELECTRICAL POWER	12.76	9.05	565.54	
1.1.5.1. SOLAR ARRAY	6.60	6.82	426.22	
1.1.5.2. BATTERIES	.39	.63	39.14	
1.1.5.3. POWER COND & DIST	5.77	1.60	100.19	
1.1.6. ITEC	10.66	5.14	321.11	
1.1.7. RENDEZVOUS & DOCKING	24.63	2.93	183.31	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.43	2.36	147.55	
1.1.7.2. DOCKING (MECHANICAL)	4.60	.57	35.78	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		3.05	190.99	
1.1.9. PROGRAM MANAGEMENT	7.82	2.04	127.33	
1.1.10. SYSTEMS ENGRG & INTEGRATION	18.47	2.14	133.69	
1.1.11. SYSTEMS TEST ARTICLE	28.51			
1.1.12. SYSTEM TEST OPERATIONS	7.06			
1.1.13. GSE	10.56			
1.1.14. FSE				
1.1.15. FACILITIES	2.78			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 8.00 15M.00

13.39.58. 01/25/80

ITEM 92 BUS TYPE 79AB CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDTEE PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDTEE PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	112.69	22.38	2430.69	2542.78
1.1.1. STRUCTURE	8.64	1.20	130.51	
1.1.1.1. STRUCTURE (PRIMARY)	5.18	1.04	112.64	
1.1.1.2. STRUCTURE (SECONDARY)	3.08	.16	17.86	
1.1.1.3. STRUCTURE (TOOLING)	.39			
1.1.2. THERMAL CONTROL	2.68	.37	39.77	
1.1.3. ATTITUDE CONTROL	22.76	2.58	279.82	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	22.03	1.51	163.82	
1.1.3.2. ATTITUDE CONTROL (AMCD)	.74	1.07	115.99	
1.1.4. REACTION CONTROL	13.00	2.01	218.55	
1.1.5. ELECTRICAL POWER	9.65	7.57	822.58	
1.1.5.1. SOLAR ARRAY	4.89	5.61	609.15	
1.1.5.2. BATTERIES	.31	.57	61.82	
1.1.5.3. POWER COND & DIST	4.45	1.40	151.61	
1.1.6. TTEC	7.74	3.75	407.75	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		2.10	227.88	
1.1.9. PROGRAM MANAGEMENT	4.77	1.40	151.92	
1.1.10. SYSTEMS ENGRG & INTEGRATION	10.25	1.40	151.92	
1.1.11. SYSTEMS TEST ARTICLE	19.58			
1.1.12. SYSTEM TEST OPERATIONS	4.41			
1.1.13. GSE	6.45			
1.1.14. FSE				
1.1.15. FACILITIES	2.17			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 16.00 70.0

13.39.58. 01/25/80

ITEM 93 BUS TYPE 8GBC CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDTEE PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDTEE PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	155.57	33.72	1723.73	1879.30
1.1.1. STRUCTURE	8.81	1.25	63.71	
1.1.1.1. STRUCTURE (PRIMARY)	5.23	1.08	54.97	
1.1.1.2. STRUCTURE (SECONDARY)	3.17	.17	8.74	
1.1.1.3. STRUCTURE (TOOLING)	.40			
1.1.2. THERMAL CONTROL	2.85	.44	22.33	
1.1.3. ATTITUDE CONTROL	30.81	4.38	223.85	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	29.62	3.03	154.80	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.19	1.35	69.05	
1.1.4. REACTION CONTROL	20.57	6.38	326.14	
1.1.5. ELECTRICAL POWER	12.14	8.36	427.15	
1.1.5.1. SOLAR ARRAY	6.11	6.17	315.30	
1.1.5.2. BATTERIES	.39	.63	32.60	
1.1.5.3. POWER COND & DIST	5.65	1.56	79.65	
1.1.6. TT&C	10.17	5.46	279.30	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		3.15	161.10	
1.1.9. PROGRAM MANAGEMENT	6.32	2.10	107.40	
1.1.10. SYSTEMS ENGRG & INTEGRATION	14.93	2.21	112.77	
1.1.11. SYSTEMS TEST ARTICLE	29.41			
1.1.12. SYSTEM TEST OPERATIONS	7.28			
1.1.13. GSE	8.53			
1.1.14. FSE				
1.1.15. FACILITIES	3.76			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 10.00 70.00

13.39.58. 01/25/80

ITEM 94 BUS TYPE RDFC CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDTEE PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDTEE PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	164.99	37.67	1925.34	2090.33
1.1.1. STRUCTURE	10.11	2.05	104.80	
1.1.1.1. STRUCTURE (PRIMARY)	6.11	1.88	96.05	
1.1.1.2. STRUCTURE (SECONDARY)	3.17	.17	8.74	
1.1.1.3. STRUCTURE (TOOLING)	.83			
1.1.2. THERMAL CONTROL	2.85	.44	22.33	
1.1.3. ATTITUDE CONTROL	31.39	4.87	248.78	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	30.10	3.46	176.70	
1.1.3.2. ATTITUDE CONTROL (AMCO)	1.28	1.41	72.08	
1.1.4. REACTION CONTROL	21.29	7.45	380.72	
1.1.5. ELECTRICAL POWER	12.83	9.07	463.56	
1.1.5.1. SOLAR ARRAY	6.60	6.82	348.50	
1.1.5.2. BATTERIES	.39	.63	32.00	
1.1.5.3. POWER COND & DIST	5.84	1.63	83.07	
1.1.6. TT&C	10.17	5.46	279.30	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		3.52	179.94	
1.1.9. PROGRAM MANAGEMENT	6.56	2.35	119.96	
1.1.10. SYSTEMS ENGRG & INTEGRATION	15.50	2.46	125.96	
1.1.11. SYSTEMS TEST ARTICLE	32.85			
1.1.12. SYSTEM TEST OPERATIONS	8.13			
1.1.13. GSE	8.86			
1.1.14. FSE				
1.1.15. FACILITIES	4.45			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE) UNITS PRODUCED 10.00 62.10

13.39.58. 01/25/80

ITEM 95 BUS TYPE 810E CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GENPLATFORM (BUS) -TOTAL	183.34	32.09	1466.00	1649.34
1.1.1. STRUCTURE	12.17	2.43	111.23	
1.1.1.1. STRUCTURE (PRIMARY)	6.33	2.13	97.39	
1.1.1.2. STRUCTURE (SECONDARY)	4.87	.30	13.84	
1.1.1.3. STRUCTURE (TOOLING)	.98			
1.1.2. THERMAL CONTROL	2.77	.40	18.38	
1.1.3. ATTITUDE CONTROL	29.74	3.59	164.00	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	28.66	2.31	105.48	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.08	1.28	58.52	
1.1.4. REACTION CONTROL	14.63	1.38	63.04	
1.1.5. ELECTRICAL POWER	12.84	9.07	414.49	
1.1.5.1. SOLAR ARRAY	6.60	6.82	311.45	
1.1.5.2. BATTERIES	.39	.63	28.60	
1.1.5.3. POWER COND & DIST	5.86	1.63	74.44	
1.1.6. TT&C	9.97	4.88	223.14	
1.1.7. RENDEZVOUS & DOCKING	25.65	3.23	147.47	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.45	2.38	108.56	
1.1.7.2. DOCKING (MECHANICAL)	6.20	.85	38.91	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		3.00	137.01	
1.1.9. PROGRAM MANAGEMENT	7.98	2.00	91.34	
1.1.10. SYSTEMS ENGRG & INTEGRATION	18.85	2.10	95.91	
1.1.11. SYSTEMS TEST ARTICLE	27.99			
1.1.12. SYSTEM TEST OPERATIONS	8.93			
1.1.13. GSE	10.78			
1.1.14. PSE				
1.1.15. FACILITIES	3.04			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 10.00 50.00

13.39.58. 01/25/80

ITEM 46 BUS TYPE 82VC CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	170.35	39.84	1710.93	1881.29
1.1.1. STRUCTURE	11.11	2.69	115.69	
1.1.1.1. STRUCTURE (PRIMARY)	6.63	2.51	108.01	
1.1.1.2. STRUCTURE (SECONDARY)	3.28	.18	7.68	
1.1.1.3. STRUCTURE (TOOLING)	1.21			
1.1.2. THERMAL CONTROL	2.87	.45	19.12	
1.1.3. ATTITUDE CONTROL	31.91	5.35	229.62	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	30.53	3.88	166.70	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.38	1.47	62.93	
1.1.4. REACTION CONTROL	21.95	8.56	367.57	
1.1.5. ELECTRICAL POWER	12.26	8.39	360.43	
1.1.5.1. SOLAR ARRAY	6.11	6.17	264.91	
1.1.5.2. BATTERIES	.39	.63	26.89	
1.1.5.3. POWER COND & DIST	5.76	1.60	68.63	
1.1.6. TT&C	10.21	5.59	240.07	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		3.72	159.90	
1.1.9. PROGRAM MANAGEMENT	6.68	2.48	106.60	
1.1.10. SYSTEMS ENGRG & INTEGRATION	15.80	2.61	111.93	
1.1.11. SYSTEMS TEST ARTICLE	34.75			
1.1.12. SYSTEM TEST OPERATIONS	8.60			
1.1.13. GSE	9.03			
1.1.14. FSE				
1.1.15. FACILITIES	5.18			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 8.00 164.00

13.59.58. 01/25/86

ITEM 97 BUS TYPE 8308 CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDTEE PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDTEE PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	118.13	24.44	1602.75	1920.88
1.1.1. STRUCTURE	9.67	1.64	121.05	
1.1.1.1. STRUCTURE (PRIMARY)	5.29	1.45	107.29	
1.1.1.2. STRUCTURE (SECONDARY)	3.38	.19	13.75	
1.1.1.3. STRUCTURE (TOOLING)	.60			
1.1.2. THERMAL CONTROL	2.71	.38	27.95	
1.1.3. ATTITUDE CONTROL	23.18	2.84	209.19	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	22.37	1.71	126.26	
1.1.3.2. ATTITUDE CONTROL (AMCD)	.81	1.12	82.93	
1.1.4. REACTION CONTROL	13.54	2.42	178.14	
1.1.5. ELECTRICAL POWER	10.64	7.80	574.98	
1.1.5.1. SOLAR ARRAY	4.89	5.61	413.56	
1.1.5.2. BATTERIES	.31	.65	47.97	
1.1.5.3. POWER COND & DIST	4.84	1.54	113.45	
1.1.6. TT&C	7.84	4.03	297.69	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		2.29	169.01	
1.1.9. PROGRAM MANAGEMENT	4.96	1.53	112.67	
1.1.10. SYSTEMS ENGRG & INTEGRATION	10.65	1.53	112.67	
1.1.11. SYSTEMS TEST ARTICLE	21.39			
1.1.12. SYSTEM TEST OPERATIONS	4.81			
1.1.13. GSE	6.70			
1.1.14. FSE				
1.1.15. FACILITIES	2.64			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 10.00 51.00

13.39.58. 01/25/80

ITEM 98 BUS TYPE 84EC CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDTEE PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	170.25	34.94	1522.90	1693.15
1.1.1. STRUCTURE	10.58	2.22	84.77	
1.1.1.1. STRUCTURE (PRIMARY)	6.25	2.03	77.56	
1.1.1.2. STRUCTURE (SECONDARY)	3.42	.19	7.20	
1.1.1.3. STRUCTURE (TOOLING)	.92			
1.1.2. THERMAL CONTROL	2.90	.46	17.36	
1.1.3. ATTITUDE CONTROL	31.73	5.18	197.50	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	30.39	3.73	142.39	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.34	1.45	55.11	
1.1.4. REACTION CONTROL	21.72	8.15	310.81	
1.1.5. ELECTRICAL POWER	13.13	9.26	352.90	
1.1.5.1. SOLAR ARRAY	6.60	6.82	259.92	
1.1.5.2. BATTERIES	.39	.72	27.28	
1.1.5.3. POWER COND & DIST	6.15	1.72	65.70	
1.1.6. TTEC	10.29	5.84	222.72	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		3.73	142.33	
1.1.9. PROGRAM MANAGEMENT	6.69	2.44	94.88	
1.1.10. SYSTEMS ENGRG & INTEGRATION	15.80	2.61	99.63	
1.1.11. SYSTEMS TEST ARTICLE	34.84			
1.1.12. SYSTEM TEST OPERATIONS	8.62			
1.1.13. GSE	9.04			
1.1.14. FSE				
1.1.15. FACILITIES	4.91			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE) UNITS PRODUCED 10.00 50.00

12.59.58. 01/25/80

ITEM 99 BUS TYPE 85CC CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDTEE PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDTEE PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	162.89	36.90	1381.25	1544.14
1.1.1. STRUCTURE	9.26	1.38	51.76	
1.1.1.1. STRUCTURE (PRIMARY)	5.38	1.19	44.68	
1.1.1.2. STRUCTURE (SECONDARY)	3.42	.19	7.07	
1.1.1.3. STRUCTURE (TOOLING)	.46			
1.1.2. THERMAL CONTROL	2.90	.48	17.64	
1.1.3. ATTITUDE CONTROL	31.20	4.70	175.95	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	29.95	3.31	123.86	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.25	1.39	52.08	
1.1.4. REACTION CONTROL	21.06	7.09	265.50	
1.1.5. ELECTRICAL POWER	13.16	9.27	346.83	
1.1.5.1. SOLAR ARRAY	6.60	6.82	255.20	
1.1.5.2. BATTERIES	.39	.72	26.78	
1.1.5.3. POWER COND & DIST	6.18	1.73	64.84	
1.1.6. TT&C	10.29	5.84	218.67	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		3.45	129.09	
1.1.9. PROGRAM MANAGEMENT	6.50	2.30	86.66	
1.1.10. SYSTEMS ENGRG & INTEGRATION	15.37	2.41	90.36	
1.1.11. SYSTEMS TEST ARTICLE	32.19			
1.1.12. SYSTEM TEST OPERATIONS	7.17			
1.1.13. GSE	8.79			
1.1.14. PSE				
1.1.15. FACILITIES	4.22			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 10.00 47.00

13.39.58. 01/25/80

ITEM 100 BUS TYPE 86RC' CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDTEE PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDTEE PLUS PROD
1.1. GLOPLATFORM (BUS) -TOTAL	194.04	37.77	1335.02	1529.06
1.1.1. STRUCTURE	10.45	2.10	74.38	
1.1.1.1. STRUCTURE (PRIMARY)	6.14	1.94	67.57	
1.1.1.2. STRUCTURE (SECONDARY)	3.47	.19	6.81	
1.1.1.3. STRUCTURE (TOOLING)	.85			
1.1.2. THERMAL CONTROL	2.90	.46	16.09	
1.1.3. ATTITUDE CONTROL	30.74	4.32	152.73	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	29.56	2.98	105.29	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.17	1.34	47.45	
1.1.4. REACTION CONTROL	16.08	3.58	126.54	
1.1.5. ELECTRICAL POWER	13.99	10.02	354.17	
1.1.5.1. SOLAR ARRAY	7.06	7.46	263.57	
1.1.5.2. BATTERIES	.39	.72	25.29	
1.1.5.3. POWER COND & DIST	6.53	1.85	65.32	
1.1.6. TT&C	10.31	5.92	209.17	
1.1.7. RENDEZVOUS & DOCKING	24.29	3.02	106.65	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.52	2.43	85.98	
1.1.7.2. DOCKING (MECHANICAL)	4.68	.58	20.67	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		3.53	124.77	
1.1.9. PROGRAM MANAGEMENT	8.19	2.35	83.18	
1.1.10. SYSTEMS ENGRG & INTEGRATION	19.36	2.47	87.34	
1.1.11. SYSTEMS TEST ARTICLE	32.94			
1.1.12. SYSTEM TEST OPERATIONS	8.15			
1.1.13. GSE	11.07			
1.1.14. PSE				
1.1.15. FACILITIES	3.66			

Table I-3. High Traffic Model Cost Runs, Contd

12.25.31. 01/21/80

ITEM 101 BUS TYPE 61PC* CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	206.76	44.14	1124.50	1333.26
1.1.1. STRUCTURE	10.98	2.27	57.87	
1.1.1.1. STRUCTURE (PRIMARY)	6.27	2.05	52.35	
1.1.1.2. STRUCTURE (SECONDARY)	3.79	.22	5.52	
1.1.1.3. STRUCTURE (COOLING)	.93			
1.1.2. THERMAL CONTROL	2.94	.47	12.10	
1.1.3. ATTITUDE CONTROL	31.20	4.70	119.72	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	29.35	3.31	84.30	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.25	1.39	35.42	
1.1.4. REACTION CONTROL	18.60	4.07	103.61	
1.1.5. ELECTRICAL POWER	17.54	13.36	340.39	
1.1.5.1. SOLAR ARRAY	8.79	9.93	252.86	
1.1.5.2. BATTERIES	.40	.98	25.06	
1.1.5.3. POWER COND & DIST	8.35	2.45	62.46	
1.1.6. TT&C	10.46	6.42	163.59	
1.1.7. RENDEZVOUS & DOCKING	24.32	3.08	78.50	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.59	2.49	63.39	
1.1.7.2. DOCKING (MECHANICAL)	4.73	.59	15.11	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		4.13	105.09	
1.1.9. PROGRAM MANAGEMENT	8.59	2.75	70.06	
1.1.10. SYSTEMS ENGRG & INTEGRATION	20.29	2.84	73.57	
1.1.11. SYSTEMS TEST ARTICLE	38.50			
1.1.12. SYSTEM TEST OPERATIONS	9.53			
1.1.13. GSE	11.60			
1.1.14. PSE				
1.1.15. FACILITIES	4.21			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 10.00 30.00

13.39.58. 01/29/80

ITEM 107 BUS TYPE 870C CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	189.19	48.51	1131.48	1320.67
1.1.1. STRUCTURE	11.64	2.64	61.52	
1.1.1.1. STRUCTURE (PRIMARY)	6.55	2.41	56.17	
1.1.1.2. STRUCTURE (SECONDARY)	3.45	.23	5.35	
1.1.1.3. STRUCTURE (TOOLING)	1.14			
1.1.2. THERMAL CONTROL	2.96	.48	11.27	
1.1.3. ATTITUDE CONTROL	32.57	6.03	140.57	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	31.08	4.50	104.86	
1.1.3.2. ATTITUDE CONTROL (ANCD)	1.49	1.53	35.71	
1.1.4. REACTION CONTROL	22.75	10.04	234.19	
1.1.5. ELECTRICAL POWER	16.68	11.84	276.25	
1.1.5.1. SOLAR ARRAY	7.95	8.71	203.07	
1.1.5.2. BATTERIES	.40	.89	20.86	
1.1.5.3. POWER COND & DIST	7.73	2.24	52.32	
1.1.6. TT&C	10.95	6.75	157.41	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		4.53	105.75	
1.1.9. PROGRAM MANAGEMENT	7.14	3.02	70.50	
1.1.10. SYSTEMS ENGRG & INTEGRATION	16.89	3.17	74.02	
1.1.11. SYSTEMS TEST ARTICLE	42.31			
1.1.12. SYSTEM TEST OPERATIONS	10.47			
1.1.13. GSE	9.65			
1.1.14. PSE				
1.1.15. FACILITIES	8.17			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 16.00 30.00

13.39.58. 01/25/80

ITEM 103 BUS TYPE 87RE CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDTEE PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDTEE PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	204.37	40.36	941.29	1145.66
1.1.1. STRUCTURE	13.46	3.07	71.50	
1.1.1.1. STRUCTURE (PRIMARY)	6.78	2.72	63.50	
1.1.1.2. STRUCTURE (SECONDARY)	5.34	.34	8.00	
1.1.1.3. STRUCTURE (TOOLING)	1.34			
1.1.2. THERMAL CONTROL	2.67	.44	10.31	
1.1.3. ATTITUDE CONTROL	30.63	4.22	98.51	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	29.40	2.85	66.37	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.23	1.38	32.14	
1.1.4. REACTION CONTROL	15.51	1.80	41.89	
1.1.5. ELECTRICAL POWER	16.64	12.59	293.65	
1.1.5.1. SOLAR ARRAY	8.38	9.32	217.37	
1.1.5.2. BATTERIES	.40	.98	22.95	
1.1.5.3. POWER COND & DIST	7.86	2.29	53.34	
1.1.6. ITEC	10.29	5.84	136.26	
1.1.7. RENDEZVOUS & DOCKING	26.56	3.47	80.97	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.57	2.47	57.66	
1.1.7.2. DOCKING (MECHANICAL)	6.99	1.00	23.31	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		3.77	87.97	
1.1.9. PROGRAM MANAGEMENT	8.58	2.51	58.65	
1.1.10. SYSTEMS ENGRG & INTEGRATION	20.28	2.64	61.58	
1.1.11. SYSTEMS TEST ARTICLE	35.20			
1.1.12. SYSTEM TEST OPERATIONS	8.71			
1.1.13. GSE	11.59			
1.1.14. FSE				
1.1.15. FACILITIES	4.66			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE: UNITS PRODUCED 16.0[illegible] 29.10

13.39.58. 01/25/80

ITEM 104 BUS TYPE 88FC' CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	209.63	44.44	1004.43	1214.06
1.1.1. STRUCTURE	11.38	2.42	54.80	
1.1.1.1. STRUCTURE (PRIMARY)	6.38	2.19	49.53	
1.1.1.2. STRUCTURE (SECONDARY)	3.99	.23	5.26	
1.1.1.3. STRUCTURE (TOOLING)	1.01			
1.1.2. THERMAL CONTROL	2.97	.49	11.03	
1.1.3. ATTITUDE CONTROL	31.39	4.87	110.03	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	30.10	3.46	78.14	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.28	1.41	31.89	
1.1.4. REACTION CONTROL	18.83	4.29	97.00	
1.1.5. ELECTRICAL POWER	16.71	12.62	285.17	
1.1.5.1. SOLAR ARRAY	8.36	9.32	210.69	
1.1.5.2. BATTERIES	.40	.98	22.24	
1.1.5.3. POWER COND & DIST	7.94	2.31	52.28	
1.1.6. TT&C	10.56	6.80	153.68	
1.1.7. RENDEZVOUS & DOCKING	24.40	3.12	70.56	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.63	2.52	56.96	
1.1.7.2. DOCKING (MECHANICAL)	4.78	.60	13.60	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		4.15	93.87	
1.1.9. PROGRAM MANAGEMENT	8.60	2.77	62.58	
1.1.10. SYSTEMS ENGRG & INTEGRATION	20.33	2.91	65.71	
1.1.11. SYSTEMS TEST ARTICLE	38.76			
1.1.12. SYSTEM TEST OPERATIONS	9.59			
1.1.13. GSE	11.62			
1.1.14. FSE				
1.1.15. FACILITIES	4.47			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 8.00 54.00

13.39.58. 01/25/80

ITEM 155 BUS TYPE 89R8 CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDTEE PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDTEE PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	136.35	32.16	1292.85	1429.20
1.1.1. STRUCTURE	11.35	2.37	95.38	
1.1.1.1. STRUCTURE (PRIMARY)	6.33	2.14	85.69	
1.1.1.2. STRUCTURE (SECONDARY)	4.04	.24	9.49	
1.1.1.3. STRUCTURE (TOOLING)	.98			
1.1.2. THERMAL CONTROL	2.79	.41	16.52	
1.1.3. ATTITUDE CONTROL	23.96	3.38	136.06	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	23.01	2.16	86.85	
1.1.3.2. ATTITUDE CONTROL (AMCD)	.94	1.22	49.21	
1.1.4. REACTION CONTROL	14.50	3.29	132.11	
1.1.5. ELECTRICAL POWER	12.97	10.89	437.67	
1.1.5.1. SOLAR ARRAY	6.36	7.91	318.16	
1.1.5.2. BATTERIES	.32	.89	35.95	
1.1.5.3. POWER COND & DIST	6.29	2.08	83.57	
1.1.6. TT&C	8.08	4.78	192.30	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		3.02	121.20	
1.1.9. PROGRAM MANAGEMENT	5.45	2.01	80.80	
1.1.10. SYSTEMS ENGRG & INTEGRATION	11.71	2.01	80.80	
1.1.11. SYSTEMS TEST ARTICLE	28.14			
1.1.12. SYSTEM TEST OPERATIONS	6.33			
1.1.13. GSE	7.36			
1.1.14. FSE				
1.1.15. FACILITIES	3.70			

Table I-3. High Traffic Model Cost Runs, Contd

18.00 28.00

12.29.31. 01/21/80

ITEM 106 BUS TYPE 628E CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDTEE PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDTEE PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	197.06	38.41	784.66	981.72
1.1.1. STRUCTURE	10.47	1.75	35.80	
1.1.1.1. STRUCTURE (PRIMARY)	5.75	1.51	30.89	
1.1.1.2. STRUCTURE (SECONDARY)	4.09	.24	4.91	
1.1.1.3. STRUCTURE (COOLING)	.63			
1.1.2. THERMAL CONTROL	2.88	.45	9.20	
1.1.3. ATTITUDE CONTROL	30.13	3.85	78.72	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	28.98	2.53	51.65	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.15	1.33	27.08	
1.1.4. REACTION CONTROL	15.03	1.56	31.80	
1.1.5. ELECTRICAL POWER	16.89	12.68	258.98	
1.1.5.1. SOLAR ARRAY	8.38	9.32	190.39	
1.1.5.2. BATTERIES	.40	.98	20.10	
1.1.5.3. POWER COND & DIST	8.12	2.37	48.49	
1.1.6. TT&C	10.36	6.09	124.49	
1.1.7. RENDEZVOUS & DOCKING	26.76	3.53	72.10	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.60	2.50	51.00	
1.1.7.2. DOCKING (MECHANICAL)	7.17	1.03	21.11	
1.1.9. INTEGRATION, ASSEMBLY, & C/O		3.59	73.33	
1.1.9. PROGRAM MANAGEMENT	8.33	2.39	48.89	
1.1.10. SYSTEMS ENGRG & INTEGRATION	19.68	2.51	51.33	
1.1.11. SYSTEMS TEST ARTICLE	33.50			
1.1.12. SYSTEM TEST OPERATIONS	8.29			
1.1.13. GSF	11.25			
1.1.14. FSF				
1.1.15. FACILITIES	3.47			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 16.00 25.00

13.39.58. 01/25/80

ITEM 137 BUS TYPE 9CPE CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	209.74	42.45	836.36	1046.11
1.1.1. STRUCTURE	13.75	3.17	62.53	
1.1.1.1. STRUCTURE (PRIMARY)	6.84	2.82	55.48	
1.1.1.2. STRUCTURE (SECONDARY)	5.51	.36	7.05	
1.1.1.3. STRUCTURE (TOOLING)	1.40			
1.1.2. THERMAL CONTROL	2.90	.46	8.97	
1.1.3. ATTITUDE CONTROL	30.83	4.38	86.28	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	29.56	2.98	58.68	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.27	1.40	27.60	
1.1.4. REACTION CONTROL	19.71	1.96	37.52	
1.1.5. ELECTRICAL POWER	17.59	13.38	263.56	
1.1.5.1. SOLAR ARRAY	8.79	9.93	195.54	
1.1.5.2. BATTERIES	.40	.98	19.38	
1.1.5.3. POWER COND & DIST	8.40	2.47	48.64	
1.1.6. TT&C	10.40	6.22	122.53	
1.1.7. RENDEZVOUS & DOCKING	26.85	3.55	69.98	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.61	2.50	49.33	
1.1.7.2. DOCKING (MECHANICAL)	7.24	1.05	20.64	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		3.97	78.16	
1.1.9. PROGRAM MANAGEMENT	8.73	2.65	52.11	
1.1.10. SYSTEMS ENGRG & INTEGRATION	20.64	2.78	54.72	
1.1.11. SYSTEMS TEST ARTICLE	37.03			
1.1.12. SYSTEM TEST OPERATIONS	9.16			
1.1.13. GSE	11.80			
1.1.14. FSE				
1.1.15. FACILITIES	4.33			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 8.00 50.00

13.39.58. 01/25/80

ITEM 108 BUS TYPE 9088 CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDTEE PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDTEE PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	134.68	31.55	1181.09	1315.76
1.1.1. STRUCTURE	10.68	1.82	68.20	
1.1.1.1. STRUCTURE (PRIMARY)	5.82	1.57	58.87	
1.1.1.2. STRUCTURE (SECONDARY)	4.21	.25	9.33	
1.1.1.3. STRUCTURE (TOOLING)	.66			
1.1.2. THERMAL CONTROL	2.82	.42	15.90	
1.1.3. ATTITUDE CONTROL	23.81	3.27	122.58	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	22.89	2.07	77.42	
1.1.3.2. ATTITUDE CONTROL (AMCD)	.92	1.21	45.16	
1.1.4. REACTION CONTROL	14.34	3.13	116.98	
1.1.5. ELECTRICAL POWER	13.24	10.99	411.41	
1.1.5.1. SOLAR ARRAY	6.36	7.91	296.27	
1.1.5.2. BATTERIES	.32	.89	33.48	
1.1.5.3. POWER COND & DIST	6.55	2.18	81.66	
1.1.6. TT&C	8.15	5.01	187.65	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		2.96	110.73	
1.1.9. PROGRAM MANAGEMENT	5.40	1.97	73.82	
1.1.10. SYSTEMS ENGRG & INTEGRATION	11.61	1.97	73.82	
1.1.11. SYSTEMS TEST ARTICLE	27.61			
1.1.12. SYSTEM TEST OPERATIONS	6.21			
1.1.13. GSE	7.30			
1.1.14. FSE				
1.1.15. FACILITIES	3.50			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED [illegible]

13.39.58. 01/25/80

ITEM 1.9 BUS TYPE 91PB CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	140.98	34.15	1230.94	1371.92
1.1.1. STRUCTURE	11.69	2.49	89.71	
1.1.1.1. STRUCTURE (PRIMARY)	6.42	2.24	80.65	
1.1.1.2. STRUCTURE (SECONDARY)	4.23	.25	9.06	
1.1.1.3. STRUCTURE (TOOLING)	1.04			
1.1.2. THERMAL CONTROL	2.82	.42	15.31	
1.1.3. ATTITUDE CONTROL	24.14	3.53	127.19	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	23.17	2.28	82.29	
1.1.3.2. ATTITUDE CONTROL (AMCD)	.97	1.25	44.91	
1.1.4. REACTION CONTROL	14.71	3.51	126.48	
1.1.5. ELECTRICAL POWER	13.20	11.72	422.28	
1.1.5.1. SOLAR ARRAY	6.70	8.47	305.37	
1.1.5.2. BATTERIES	.32	.98	35.16	
1.1.5.3. POWER COND & DIST	6.78	2.27	81.75	
1.1.6. TT&C	8.15	5.01	180.69	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		3.20	115.40	
1.1.9. PROGRAM MANAGEMENT	5.57	2.13	76.93	
1.1.10. SYSTEMS ENGRG & INTEGRATION	11.98	2.13	76.93	
1.1.11. SYSTEMS TEST ARTICLE	29.68			
1.1.12. SYSTEM TEST OPERATIONS	6.72			
1.1.13. GSE	7.53			
1.1.14. PSE				
1.1.15. FACILITIES	3.98			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 10.00 24.00

13.39.58. 01/25/80

ITEM 110 BUS TYPE 91EC* CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	217.22	47.60	903.02	1120.25
1.1.1. STRUCTURE	11.92	2.63	49.81	
1.1.1.1. STRUCTURE (PRIMARY)	6.52	2.37	44.96	
1.1.1.2. STRUCTURE (SECONDARY)	4.29	.26	4.85	
1.1.1.3. STRUCTURE (TOOLING)	1.12			
1.1.2. THERMAL CONTROL	3.01	.51	9.65	
1.1.3. ATTITUDE CONTROL	31.74	5.18	98.32	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	30.39	3.73	70.85	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.35	1.45	27.47	
1.1.4. REACTION CONTROL	19.22	4.71	89.26	
1.1.5. ELECTRICAL POWER	17.87	13.56	257.28	
1.1.5.1. SOLAR ARRAY	8.79	9.93	188.29	
1.1.5.2. BATTERIES	.40	1.07	20.36	
1.1.5.3. POWER COND & DIST	8.68	2.56	48.64	
1.1.6. TT&C	10.69	7.30	138.54	
1.1.7. RENDEZVOUS & DOCKING	24.52	3.19	60.43	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.69	2.58	48.86	
1.1.7.2. DOCKING (MECHANICAL)	4.83	.61	11.57	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		4.45	84.39	
1.1.9. PROGRAM MANAGEMENT	8.80	2.97	56.26	
1.1.10. SYSTEMS ENGRG & INTEGRATION	20.81	3.11	59.08	
1.1.11. SYSTEMS TEST ARTICLE	41.52			
1.1.12. SYSTEM TEST OPERATIONS	10.28			
1.1.13. GSE	11.90			
1.1.14. PSE				
1.1.15. FACILITIES	4.94			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 10.00 23.00

13.39.58. 01/25/80

ITEM 111 BUS TYPE 92VC* CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1960$M)

	RDTEE PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	223.24	50.14	914.40	1137.64
1.1.1. STRUCTURE	12.64	3.14	57.19	
1.1.1.1. STRUCTURE (PRIMARY)	6.88	2.88	52.47	
1.1.1.2. STRUCTURE (SECONDARY)	4.33	.26	4.72	
1.1.1.3. STRUCTURE (TOOLING)	1.44			
1.1.2. THERMAL CONTROL	3.61	.51	9.27	
1.1.3. ATTITUDE CONTROL	32.05	5.49	100.13	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	30.65	4.01	73.16	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.40	1.48	26.97	
1.1.4. REACTION CONTROL	19.55	5.08	92.73	
1.1.5. ELECTRICAL POWER	18.55	14.26	266.00	
1.1.5.1. SOLAR ARRAY	9.19	10.52	191.94	
1.1.5.2. BATTERIES	.40	1.07	19.57	
1.1.5.3. POWER COND & DIST	8.96	2.66	48.49	
1.1.6. TT&C	10.71	7.38	134.56	
1.1.7. RENDEZVOUS & DOCKING	24.54	3.19	58.27	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.70	2.58	47.12	
1.1.7.2. DOCKING (MECHANICAL)	4.83	.61	11.14	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		4.69	85.46	
1.1.9. PROGRAM MANAGEMENT	8.96	3.12	56.97	
1.1.10. SYSTEMS ENGRG & INTEGRATION	21.17	3.28	59.82	
1.1.11. SYSTEMS TEST ARTICLE	43.74			
1.1.12. SYSTEM TEST OPERATIONS	10.82			
1.1.13. GSE	12.11			
1.1.14. FSE				
1.1.15. FACILITIES	5.38			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 10.00 22.00

13.39.56. 01/25/80

ITEM 112 BUS TYPE 93GC CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	ROTEE PHASE COST	FIRST UNIT COST	PROD PHASE COST	ROTEE PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	196.40	52.15	912.69	1109.08
1.1.1. STRUCTURE	10.99	1.92	33.66	
1.1.1.1. STRUCTURE (PRIMARY)	5.90	1.66	29.05	
1.1.1.2. STRUCTURE (SECONDARY)	4.38	.26	4.61	
1.1.1.3. STRUCTURE (TOOLING)	.71			
1.1.2. THERMAL CONTROL	3.62	.91	8.95	
1.1.3. ATTITUDE CONTROL	32.64	6.10	106.71	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	31.14	4.56	79.81	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.50	1.54	26.99	
1.1.4. REACTION CONTROL	22.83	10.19	178.40	
1.1.5. ELECTRICAL POWER	18.67	14.38	251.76	
1.1.5.1. SOLAR ARRAY	9.19	10.52	184.20	
1.1.5.2. BATTERIES	.41	1.16	20.35	
1.1.5.3. POWER COND & DIST	9.07	2.70	47.21	
1.1.6. TT&C	10.74	7.50	131.34	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		4.87	85.30	
1.1.9. PROGRAM MANAGEMENT	7.32	3.25	56.87	
1.1.10. SYSTEMS ENGRG & INTEGRATION	17.29	3.41	59.71	
1.1.11. SYSTEMS TEST ARTICLE	45.49			
1.1.12. SYSTEM TEST OPERATIONS	11.26			
1.1.13. GSE	9.89			
1.1.14. FSE				
1.1.15. FACILITIES	6.27			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 16.00 20.00

12:20:51 01/30/80

ITEM 113 -RERUN- BUS TYPE 63NC CASE 111

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	210.18	58.41	935.66	1146.04
1.1.1. STRUCTURE	12.64	3.03	48.52	
1.1.1.1. STRUCTURE (PRIMARY)	6.80	2.76	44.17	
1.1.1.2. STRUCTURE (SECONDARY)	4.48	.27	4.35	
1.1.1.3. STRUCTURE (TOOLING)	1.36			
1.1.2. THERMAL CONTROL	3.04	.52	8.32	
1.1.3. ATTITUDE CONTROL	33.37	6.95	111.38	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	31.74	5.34	85.60	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.63	1.61	25.78	
1.1.4. REACTION CONTROL	23.68	12.03	192.79	
1.1.5. ELECTRICAL POWER	19.60	15.25	244.38	
1.1.5.1. SOLAR ARRAY	9.59	11.12	178.15	
1.1.5.2. BATTERIES	.41	1.25	20.06	
1.1.5.3. POWER COND & DIST	9.60	2.88	46.17	
1.1.6. TT&C	10.79	7.71	123.47	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		5.46	87.46	
1.1.9. PROGRAM MANAGEMENT	7.63	3.64	58.31	
1.1.10. SYSTEMS ENGRG & INTEGRATION	18.04	3.82	61.22	
1.1.11. SYSTEMS TEST ARTICLE	50.95			
1.1.12. SYSTEM TEST OPERATIONS	12.61			
1.1.13. GSE	19.31			
1.1.14. PSE				
1.1.15. FACILITIES	7.52			

Table I-3. High Traffic Model Cost Runs, Contd

[illegible] UNITS PRODUCED 18.00 23.00

12.25.31. 01/21/80

ITEM 114 BUS TYPE 63CE CASE 11

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	210.80	43.96	704.31	915.11
1.1.1. STRUCTURE	11.18	1.96	31.79	
1.1.1.1. STRUCTURE (PRIMARY)	5.96	1.71	27.44	
1.1.1.2. STRUCTURE (SECONDARY)	4.48	.27	4.35	
1.1.1.3. STRUCTURE (TOOLING)	.74			
1.1.2. THERMAL CONTROL	2.94	.47	7.61	
1.1.3. ATTITUDE CONTROL	30.61	4.21	67.39	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	29.38	2.83	45.33	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.23	1.38	22.06	
1.1.4. REACTION CONTROL	15.49	1.79	28.64	
1.1.5. ELECTRICAL POWER	19.70	15.29	244.93	
1.1.5.1. SOLAR ARRAY	9.59	11.12	178.15	
1.1.5.2. BATTERIES	.41	1.25	20.06	
1.1.5.3. POWER COND & DIST	9.70	2.92	46.71	
1.1.6. TT&C	10.56	6.80	108.94	
1.1.7. RENDEZVOUS & DOCKING	27.34	3.70	59.23	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.68	2.57	41.15	
1.1.7.2. DOCKING (MECHANICAL)	7.66	1.13	18.08	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		4.11	65.82	
1.1.9. PROGRAM MANAGEMENT	8.72	2.74	43.88	
1.1.10. SYSTEMS ENGRG & INTEGRATION	20.61	2.88	46.08	
1.1.11. SYSTEMS TEST ARTICLE	38.34			
1.1.12. SYSTEM TEST OPERATIONS	9.49			
1.1.13. GSE	11.78			
1.1.14. FSE				
1.1.15. FACILITIES	4.05			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE: UNITS PRODUCED 10.00 20.00

13.39.58. 01/25/80

ITEM 115 BUS TYPE 63FE CASE 11

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	220.45	46.79	749.74	970.19
1.1.1. STRUCTURE	14.25	3.57	54.03	
1.1.1.1. STRUCTURE (PRIMARY)	6.96	2.99	47.93	
1.1.1.2. STRUCTURE (SECONDARY)	5.78	.38	6.11	
1.1.1.3. STRUCTURE (TOOLING)	1.51			
1.1.2. THERMAL CONTROL	2.94	.47	7.61	
1.1.3. ATTITUDE CONTROL	31.22	4.70	79.31	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	29.89	3.26	52.23	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.33	1.44	23.08	
1.1.4. REACTION CONTROL	16.08	2.11	33.79	
1.1.5. ELECTRICAL POWER	19.71	15.2[illegible]	244.99	
1.1.5.1. SOLAR ARRAY	9.59	11.12	178.15	
1.1.5.2. BATTERIES	.41	1.25	20.06	
1.1.5.3. POWER COND & DIST	9.71	2.92	46.78	
1.1.6. TT&C	10.56	6.80	108.94	
1.1.7. RENDEZVOUS & DOCKING	27.34	3.70	59.23	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.68	2.57	41.15	
1.1.7.2. DOCKING (MECHANICAL)	7.66	1.13	18.08	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		4.37	70.07	
1.1.9. PROGRAM MANAGEMENT	9.64	2.92	46.71	
1.1.10. SYSTEMS ENGRG & INTEGRATION	21.35	3.06	49.05	
1.1.11. SYSTEMS TEST ARTICLE	40.01			
1.1.12. SYSTEM TEST OPERATIONS	16.10			
1.1.13. GSE	12.21			
1.1.14. PSE				
1.1.15. FACILITIES	4.84			

Table I-3. High Traffic Model Cost Runs, Contd

SERVICE LIFE (YRS) 15.00 15.00

11.41.30. 01/21/80

ITEM 116 BUS TYPE 69CB CASE 11

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	144.28	35.91	1093.30	1237.59
1.1.1. STRUCTURE	11.20	1.99	60.68	
1.1.1.1. STRUCTURE (PRIMARY)	5.96	1.72	52.38	
1.1.1.2. STRUCTURE (SECONDARY)	4.50	.27	8.30	
1.1.1.3. STRUCTURE (TOOLING)	.74			
1.1.2. THERMAL CONTROL	2.85	.44	13.30	
1.1.3. ATTITUDE CONTROL	24.10	3.50	106.43	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	23.13	2.25	68.57	
1.1.3.2. ATTITUDE CONTROL (AMCD)	.97	1.24	37.86	
1.1.4. REACTION CONTROL	14.69	3.48	106.06	
1.1.5. ELECTRICAL POWER	45.30	13.22	402.50	
1.1.5.1. SOLAR ARRAY	7.36	9.57	291.29	
1.1.5.2. BATTERIES	.32	1.05	32.18	
1.1.5.3. POWER COND & DIST	7.62	2.60	79.03	
1.1.6. TT&C	8.26	5.43	165.17	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY & C/O		3.37	102.50	
1.1.9. PROGRAM MANAGEMENT	5.65	2.24	68.33	
1.1.10. SYSTEMS ENGRG & INTEGRATION	12.15	2.24	68.33	
1.1.11. SYSTEMS TEST ARTICLE	31.42			
1.1.12. SYSTEM TEST OPERATIONS	7.07			
1.1.13. GSE	7.64			
1.1.14. FSE				
1.1.15. FACILITIES	3.94			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 8.00 40.00

13.39.58. 11/25/80

ITEM 117 BUS TYPE 1C1FB CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	153.02	39.54	1203.76	1356.77
1.1.1. STRUCTURE	12.46	2.76	84.16	
1.1.1.1. STRUCTURE (PRIMARY)	6.80	2.48	75.42	
1.1.1.2. STRUCTURE (SECONDARY)	4.67	.29	8.74	
1.1.1.3. STRUCTURE (TOOLING)	1.18			
1.1.2. THERMAL CONTROL	2.88	.45	13.71	
1.1.3. ATTITUDE CONTROL	24.54	3.85	117.30	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	23.49	2.56	77.84	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.05	1.30	39.47	
1.1.4. REACTION CONTROL	15.19	4.05	123.24	
1.1.5. ELECTRICAL POWER	16.12	14.12	429.88	
1.1.5.1. SOLAR ARRAY	7.67	10.11	307.71	
1.1.5.2. BATTERIES	.33	1.22	37.13	
1.1.5.3. POWER COND & DIST	8.12	2.79	85.04	
1.1.6. TT&C	8.32	5.65	172.14	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		3.71	112.85	
1.1.9. PROGRAM MANAGEMENT	5.88	2.47	75.23	
1.1.10. SYSTEMS ENGRG & INTEGRATION	12.64	2.47	75.23	
1.1.11. SYSTEMS TEST ARTICLE	34.60			
1.1.12. SYSTEM TEST OPERATIONS	7.78			
1.1.13. GSE	7.95			
1.1.14. PSE				
1.1.15. FACILITIES	4.65			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE) UNITS PRODUCED 10.00 17.00

13.39.58. 01/25/80

ITEM 218 BUS TYPE 94HC CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDTEE PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDTEE PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	227.66	66.98	923.36	1151.01
1.1.1. STRUCTURE	12.00	2.26	31.21	
1.1.1.1. STRUCTURE (PRIMARY)	6.18	1.95	26.94	
1.1.1.2. STRUCTURE (SECONDARY)	4.95	.31	4.27	
1.1.1.3. STRUCTURE (TOOLING)	.87			
1.1.2. THERMAL CONTROL	3.10	.55	7.58	
1.1.3. ATTITUDE CONTROL	33.59	7.23	99.61	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	31.92	5.60	77.14	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.67	1.63	22.47	
1.1.4. REACTION CONTROL	23.94	12.62	173.94	
1.1.5. ELECTRICAL POWER	25.21	20.80	286.68	
1.1.5.1. SOLAR ARRAY	12.14	15.14	208.64	
1.1.5.2. BATTERIES	.42	1.70	23.42	
1.1.5.3. POWER COND & DIST	12.66	3.96	54.61	
1.1.6. TT&C	11.02	8.71	120.11	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		6.26	86.30	
1.1.9. PROGRAM MANAGEMENT	8.06	4.17	57.53	
1.1.10. SYSTEMS ENGRG & INTEGRATION	19.04	4.38	60.41	
1.1.11. SYSTEMS TEST ARTICLE	58.43			
1.1.12. SYSTEM TEST OPERATIONS	14.46			
1.1.13. GSE	10.89			
1.1.14. FSE				
1.1.15. FACILITIES	7.92			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 16.00 17.00

13.39.58. 01/25/80

ITEM 119 PUS TYPE 94EE CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDTEE PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDTEE PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	242.84	56.53	779.23	1022.07
1.1.1. STRUCTURE	14.86	3.63	50.00	
1.1.1.1. STRUCTURE (PRIMARY)	7.10	3.22	44.33	
1.1.1.2. STRUCTURE (SECONDARY)	6.12	.41	5.67	
1.1.1.3. STRUCTURE (TOOLING)	1.66			
1.1.2. THERMAL CONTROL	3.60	.50	6.94	
1.1.3. ATTITUDE CONTROL	31.77	5.18	71.43	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	30.34	3.69	50.81	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.43	1.50	20.62	
1.1.4. REACTION CONTROL	16.57	2.42	33.33	
1.1.5. ELECTRICAL POWER	25.32	20.83	287.19	
1.1.5.1. SOLAR ARRAY	12.14	15.14	208.64	
1.1.5.2. BATTERIES	.42	1.70	23.42	
1.1.5.3. POWER COND & DIST	12.76	4.00	55.13	
1.1.6. TT&C	10.76	7.58	104.49	
1.1.7. RENDEZVOUS & DOCKING	27.96	3.88	53.50	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.78	2.65	36.49	
1.1.7.2. DOCKING (MECHANICAL)	8.18	1.23	17.00	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		5.28	72.83	
1.1.9. PROGRAM MANAGEMENT	9.64	3.52	48.55	
1.1.10. SYSTEMS ENGRG & INTEGRATION	22.78	3.70	50.98	
1.1.11. SYSTEMS TEST ARTICLE	49.31			
1.1.12. SYSTEM TEST OPERATIONS	12.20			
1.1.13. GSE	13.03			
1.1.14. FSE				
1.1.15. FACILITIES	5.62			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 8.00 34.00

13.39.58. 01/25/80

ITEM 120 BUS TYPE 94EB CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	166.80	46.00	1204.89	1371.69
1.1.1. STRUCTURE	12.94	2.96	77.47	
1.1.1.1. STRUCTURE (PRIMARY)	6.73	2.65	69.41	
1.1.1.2. STRUCTURE (SECONDARY)	4.93	.31	8.06	
1.1.1.3. STRUCTURE (TOOLING)	1.29			
1.1.2. THERMAL CONTROL	2.91	.46	12.14	
1.1.3. ATTITUDE CONTROL	24.86	4.15	108.60	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	23.76	2.81	73.68	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.10	1.33	34.92	
1.1.4. REACTION CONTROL	15.54	4.49	117.66	
1.1.5. ELECTRICAL POWER	19.56	17.86	467.76	
1.1.5.1. SOLAR ARRAY	9.15	12.74	333.56	
1.1.5.2. BATTERIES	.33	1.54	40.46	
1.1.5.3. POWER COND & DIST	10.07	3.58	93.74	
1.1.6. TT&C	8.41	6.02	157.68	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		4.31	112.96	
1.1.9. PROGRAM MANAGEMENT	6.23	2.88	75.31	
1.1.10. SYSTEMS ENGRG & INTEGRATION	13.39	2.88	75.31	
1.1.11. SYSTEMS TEST ARTICLE	40.25			
1.1.12. SYSTEM TEST OPERATIONS	9.06			
1.1.13. GSE	8.42			
1.1.14. FSE				
1.1.15. FACILITIES	5.21			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 16.00 17.00

13.39.58. 01/25/80

ITEM 121 BUS TYPE 940C' CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDTEE PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDTEE PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	250.27	62.51	861.62	1111.90
1.1.1. STRUCTURE	13.19	3.13	43.11	
1.1.1.1. STRUCTURE (PRIMARY)	6.84	2.82	38.84	
1.1.1.2. STRUCTURE (SECONDARY)	4.95	.31	4.27	
1.1.1.3. STRUCTURE (TOOLING)	1.40			
1.1.2. THERMAL CONTROL	3.10	.55	7.58	
1.1.3. ATTITUDE CONTROL	32.70	6.17	85.61	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	31.19	4.62	63.74	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.51	1.54	21.27	
1.1.4. REACTION CONTROL	20.24	5.94	81.82	
1.1.5. ELECTRICAL POWER	25.35	20.85	287.36	
1.1.5.1. SOLAR ARRAY	12.14	15.14	208.64	
1.1.5.2. BATTERIES	.42	1.70	23.42	
1.1.5.3. POWER COND & DIST	12.80	4.01	55.30	
1.1.6. TT&C	11.02	8.71	120.11	
1.1.7. RENDEZVOUS & DOCKING	24.80	3.34	46.05	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.85	2.71	37.37	
1.1.7.2. DOCKING (MECHANICAL)	4.95	.63	8.68	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		5.84	80.53	
1.1.9. PROGRAM MANAGEMENT	9.65	3.89	53.68	
1.1.10. SYSTEMS ENGRG & INTEGRATION	22.81	4.09	56.37	
1.1.11. SYSTEMS TEST ARTICLE	54.52			
1.1.12. SYSTEM TEST OPERATIONS	13.49			
1.1.13. GSE	13.04			
1.1.14. FSE				
1.1.15. FACILITIES	6.37			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 16.00 16.00

13.39.56. 01/25/80

ITEM 122 BUS TYPE 95DE CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDTEE PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDTEE PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	242.67	56.74	739.46	982.13
1.1.1. STRUCTURE	14.18	3.05	39.71	
1.1.1.1. STRUCTURE (PRIMARY)	6.71	2.63	34.27	
1.1.1.2. STRUCTURE (SECONDARY)	6.19	.42	5.44	
1.1.1.3. STRUCTURE (TOOLING)	1.28			
1.1.2. THERMAL CONTROL	3.01	.51	6.63	
1.1.3. ATTITUDE CONTROL	31.59	5.02	65.38	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	30.19	3.54	46.12	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.40	1.48	19.26	
1.1.4. REACTION CONTROL	16.41	2.32	30.18	
1.1.5. ELECTRICAL POWER	26.06	21.63	281.83	
1.1.5.1. SOLAR ARRAY	12.48	15.69	264.52	
1.1.5.2. BATTERIES	.42	1.79	23.31	
1.1.5.3. POWER COND & DIST	13.16	4.14	54.01	
1.1.6. TTEC	10.80	7.76	101.08	
1.1.7. RENDEZVOUS & DOCKING	28.10	3.92	51.09	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.80	2.66	34.71	
1.1.7.2. DOCKING (MECHANICAL)	8.30	1.26	16.39	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		5.30	69.11	
1.1.9. PROGRAM MANAGEMENT	9.63	3.54	46.07	
1.1.10. SYSTEMS ENGRG & INTEGRATION	22.76	3.71	48.38	
1.1.11. SYSTEMS TEST ARTICLE	49.49			
1.1.12. SYSTEM TEST OPERATIONS	12.25			
1.1.13. GSE	13.02			
1.1.14. FSE				
1.1.15. FACILITIES	5.26			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 10.00 10.00

13.39.58. 01/25/80

ITEM 123 BUS TYPE 95VE CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDTEE PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDTEE PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	248.86	59.01	769.00	1017.86
1.1.1. STRUCTURE	15.53	4.10	53.41	
1.1.1.1. STRUCTURE (PRIMARY)	7.37	3.68	47.98	
1.1.1.2. STRUCTURE (SECONDARY)	6.19	.42	5.44	
1.1.1.3. STRUCTURE (TOOLING)	1.97			
1.1.2. THERMAL CONTROL	3.01	.51	6.63	
1.1.3. ATTITUDE CONTROL	32.06	5.45	71.68	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	30.58	3.93	51.22	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.48	1.52	19.86	
1.1.4. REACTION CONTROL	16.82	2.59	33.73	
1.1.5. ELECTRICAL POWER	26.07	21.63	281.89	
1.1.5.1. SOLAR ARRAY	12.48	15.69	204.52	
1.1.5.2. BATTERIES	.42	1.79	23.31	
1.1.5.3. POWER COND & DIST	13.17	4.15	54.06	
1.1.6. TTEC	10.80	7.76	101.08	
1.1.7. RENDEZVOUS & DOCKING	28.10	3.92	51.09	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.80	2.66	34.71	
1.1.7.2. DOCKING (MECHANICAL)	8.30	1.26	16.39	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		5.51	71.87	
1.1.9. PROGRAM MANAGEMENT	9.80	3.68	47.91	
1.1.10. SYSTEMS ENG'G & INTEGRATION	23.16	3.86	50.31	
1.1.11. SYSTEMS TEST ARTICLE	51.47			
1.1.12. SYSTEM TEST OPERATIONS	12.74			
1.1.13. GSE	13.24			
1.1.14. FSE				
1.1.15. FACILITIES	6.06			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE: UNITS PRODUCED 8.00 32.00

13.39.58. 01/25/80

ITEM 124 PUS TYPE 95V8 CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDTEE PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDTEE PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	172.75	48.62	1203.96	1376.71
1.1.1. STRUCTURE	13.71	3.47	86.01	
1.1.1.1. STRUCTURE (PRIMARY)	7.06	3.16	78.17	
1.1.1.2. STRUCTURE (SECONDARY)	5.03	.32	7.84	
1.1.1.3. STRUCTURE (TOOLING)	1.62			
1.1.2. THERMAL CONTROL	2.93	.47	11.68	
1.1.3. ATTITUDE CONTROL	25.12	4.39	108.66	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	23.97	3.02	74.86	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.15	1.37	33.80	
1.1.4. REACTION CONTROL	15.64	4.89	120.97	
1.1.5. ELECTRICAL POWER	20.16	18.59	466.22	
1.1.5.1. SOLAR ARRAY	9.43	13.25	328.07	
1.1.5.2. BATTERIES	.34	1.63	40.26	
1.1.5.3. POWER COND & DIST	10.39	3.71	91.89	
1.1.6. TT&C	8.45	6.18	153.05	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		4.56	112.87	
1.1.9. PROGRAM MANAGEMENT	6.38	3.04	75.25	
1.1.10. SYSTEMS ENGRG & INTEGRATION	13.71	3.04	75.25	
1.1.11. SYSTEMS TEST ARTICLE	42.55			
1.1.12. SYSTEM TEST OPERATIONS	9.57			
1.1.13. GSE	8.62			
1.1.14. FSE				
1.1.15. FACILITIES	5.71			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 8.00 32.00

13.39.58. 01/25/80

ITEM 125 BUS TYPE 9508 CASE II

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDTEE PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDTEE PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	165.47	45.76	1133.00	1298.47
1.1.1. STRUCTURE	12.14	2.31	57.17	
1.1.1.1. STRUCTURE (PRIMARY)	6.21	1.99	49.32	
1.1.1.2. STRUCTURE (SECONDARY)	5.03	.32	7.84	
1.1.1.3. STRUCTURE (TOOLING)	.89			
1.1.2. THERMAL CONTROL	2.93	.47	11.68	
1.1.3. ATTITUDE CONTROL	24.87	3.97	98.41	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	23.60	2.66	65.93	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.27	1.31	32.48	
1.1.4. REACTION CONTROL	15.34	4.23	104.73	
1.1.5. ELECTRICAL POWER	20.15	18.58	460.13	
1.1.5.1. SOLAR ARRAY	9.43	13.25	328.07	
1.1.5.2. BATTERIES	.34	1.63	40.26	
1.1.5.3. POWER COND & DIST	10.38	3.71	91.80	
1.1.6. TTEC	8.45	6.18	153.05	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		4.29	106.22	
1.1.9. PROGRAM MANAGEMENT	6.19	2.86	70.81	
1.1.10. SYSTEMS ENGRG & INTEGRATION	13.31	2.86	70.81	
1.1.11. SYSTEMS TEST ARTICLE	46.04			
1.1.12. SYSTEM TEST OPERATIONS	9.01			
1.1.13. GSE	8.37			
1.1.14. FSE				
1.1.15. FACILITIES	4.87			

Table I-3. High Traffic Model Cost Runs, Contd

12.25.31. 01/21/80

ITEM 126 BUS TYPE 65NC1 CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	282.37	76.88	767.65	1050.02
1.1.1. STRUCTURE	15.57	3.65	36.46	
1.1.1.1. STRUCTURE (PRIMARY)	7.07	3.17	31.67	
1.1.1.2. STRUCTURE (SECONDARY)	6.97	.48	4.79	
1.1.1.3. STRUCTURE (TOOLING)	1.63			
1.1.2. THERMAL CONTROL	3.22	.61	6.09	
1.1.3. ATTITUDE CONTROL	33.59	7.23	72.14	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	31.92	5.60	55.87	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.67	1.63	16.27	
1.1.4. REACTION CONTROL	21.15	7.24	72.30	
1.1.5. ELECTRICAL POWER	31.39	27.11	270.63	
1.1.5.1. SOLAR ARRAY	14.74	19.51	194.76	
1.1.5.2. BATTERIES	.43	2.33	23.22	
1.1.5.3. POWER COND & DIST	16.22	5.27	52.65	
1.1.6. TT&C	11.38	10.50	104.86	
1.1.7. RENDEZVOUS & DOCKING	25.15	3.54	35.37	
1.1.7.1. RENDEZVOUS (AVIONICS)	20.04	2.88	28.80	
1.1.7.2. DOCKING (MECHANICAL)	5.11	.66	6.57	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		7.19	71.74	
1.1.9. PROGRAM MANAGEMENT	10.47	4.79	47.83	
1.1.10. SYSTEMS ENGRG & INTEGRATION	24.74	5.03	50.22	
1.1.11. SYSTEMS TEST ARTICLE	67.06			
1.1.12. SYSTEM TEST OPERATIONS	16.60			
1.1.13. GSE	14.14			
1.1.14. FSE				
1.1.15. FACILITIES	7.91			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE) UNITS PRODUCED 15.00 12.00

13.39.58. 01/25/80

ITEM 127 BUS TYPE 650E CASE III - RERUN

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDTEE PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDTEE PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	266.34	67.86	677.52	943.86
1.1.1. STRUCTURE	14.23	3.48	34.74	
1.1.1.1. STRUCTURE (PRIMARY)	7.64	3.11	31.09	
1.1.1.2. STRUCTURE (SECONDARY)	5.61	.37	3.65	
1.1.1.3. STRUCTURE (TOOLING)	1.59			
1.1.2. THERMAL CONTROL	3.11	.55	5.54	
1.1.3. ATTITUDE CONTROL	32.33	5.72	57.16	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	30.80	4.17	41.67	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.53	1.55	15.49	
1.1.4. REACTION CONTROL	17.07	2.76	27.59	
1.1.5. ELECTRICAL POWER	31.34	27.09	270.47	
1.1.5.1. SOLAR ARRAY	14.74	19.51	194.78	
1.1.5.2. BATTERIES	.43	2.33	23.22	
1.1.5.3. POWER COND & DIST	16.18	5.26	52.49	
1.1.6. TT&C	11.10	9.09	90.77	
1.1.7. RENDEZVOUS & DOCKING	28.69	4.15	41.39	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.95	2.80	27.94	
1.1.7.2. DOCKING (MECHANICAL)	8.75	1.35	13.46	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		6.34	63.32	
1.1.9. PROGRAM MANAGEMENT	10.20	4.23	42.21	
1.1.10. SYSTEMS ENGRG & INTEGRATION	24.12	4.44	44.32	
1.1.11. SYSTEMS TEST ARTICLE	59.19			
1.1.12. SYSTEM TEST OPERATIONS	14.65			
1.1.13. GSE	13.79			
1.1.14. FSE				
1.1.15. FACILITIES	6.51			

Table 1-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE: UNITS PRODUCED 8.00 24.00

11.41.30. 01/21/80

ITEM 120 BUS TYPE 650B CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	191.41	57.81	1096.72	1288.12
1.1.1. STRUCTURE	14.22	3.47	65.91	
1.1.1.1. STRUCTURE (PRIMARY)	7.03	3.11	58.99	
1.1.1.2. STRUCTURE (SECONDARY)	5.60	.37	6.92	
1.1.1.3. STRUCTURE (TOOLING)	1.59			
1.1.2. THERMAL CONTROL	3.02	.51	9.71	
1.1.3. ATTITUDE CONTROL	25.54	4.81	91.22	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	24.31	3.40	64.41	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.23	1.41	26.81	
1.1.4. REACTION CONTROL	16.29	5.54	105.15	
1.1.5. ELECTRICAL POWER	24.45	23.59	447.59	
1.1.5.1. SOLAR ARRAY	11.29	16.76	317.87	
1.1.5.2. BATTERIES	.34	2.11	40.10	
1.1.5.3. POWER COND & DIST	12.81	4.72	89.61	
1.1.6. TTGC	8.68	7.23	137.24	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		5.42	102.82	
1.1.9. PROGRAM MANAGEMENT	6.82	3.61	68.54	
1.1.10. SYSTEMS ENGRG & INTEGRATION	14.66	3.61	68.54	
1.1.11. SYSTEMS TEST ARTICLE	50.59			
1.1.12. SYSTEM TEST OPERATIONS	11.38			
1.1.13. GSE	9.22			
1.1.14. FSE				
1.1.15. FACILITIES	6.56			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE: UNITS PRODUCED [illegible]

13.39.58. 01/25/80

ITEM 129 BUS TYPE 96MC* CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDTEE PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDTEE PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	276.97	75.44	753.22	1030.19
1.1.1. STRUCTURE	13.34	2.74	27.33	
1.1.1.1. STRUCTURE (PRIMARY)	6.51	2.36	23.59	
1.1.1.2. STRUCTURE (SECONDARY)	5.71	.37	3.74	
1.1.1.3. STRUCTURE (TOOLING)	1.11			
1.1.2. THERMAL CONTROL	3.24	.62	6.21	
1.1.3. ATTITUDE CONTROL	33.36	6.93	69.23	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	31.73	5.33	53.18	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.63	1.61	16.04	
1.1.4. REACTION CONTROL	20.92	6.88	68.73	
1.1.5. ELECTRICAL POWER	31.40	27.11	270.67	
1.1.5.1. SOLAR ARRAY	14.74	19.91	194.76	
1.1.5.2. BATTERIES	.43	2.33	23.22	
1.1.5.3. POWER COND & DIST	16.23	5.28	52.69	
1.1.6. TT&C	11.45	10.88	108.63	
1.1.7. RENDEZVOUS & DOCKING	25.23	3.99	39.83	
1.1.7.1. RENDEZVOUS (AVIONICS)	20.08	2.92	29.23	
1.1.7.2. DOCKING (MECHANICAL)	5.15	.66	6.63	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		7.05	70.39	
1.1.9. PROGRAM MANAGEMENT	10.28	4.70	46.93	
1.1.10. SYSTEMS ENGRG & INTEGRATION	24.30	4.94	49.28	
1.1.11. SYSTEMS TEST ARTICLE	65.80			
1.1.12. SYSTEM TEST OPERATIONS	16.29			
1.1.13. GSE	13.89			
1.1.14. PSE				
1.1.15. FACILITIES	7.48			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE: UNITS PRODUCED 10.00 12.00

13.39.50. 01/25/80

ITEM 130 BUS TYPE 96GE CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	DDTEE PHASE COST	FIRST UNIT COST	PROD PHASE COST	DDTEE PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	264.69	67.54	674.32	939.30
1.1.1. STRUCTURE	13.63	2.95	29.41	
1.1.1.1. STRUCTURE (PRIMARY)	6.67	2.57	25.66	
1.1.1.2. STRUCTURE (SECONDARY)	5.72	.38	3.75	
1.1.1.3. STRUCTURE (TOOLING)	1.24			
1.1.2. THERMAL CONTROL	3.13	.57	5.66	
1.1.3. ATTITUDE CONTROL	32.22	5.62	56.08	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	30.71	4.08	40.70	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.51	1.54	15.38	
1.1.4. REACTION CONTROL	16.98	2.69	26.91	
1.1.5. ELECTRICAL POWER	31.35	27.09	270.51	
1.1.5.1. SOLAR ARRAY	14.74	19.51	194.76	
1.1.5.2. BATTERIES	.43	2.33	23.22	
1.1.5.3. POWER COND & DIST	16.19	5.26	52.53	
1.1.6. TTEC	11.18	9.49	94.83	
1.1.7. RENDEZVOUS & DOCKING	26.78	4.19	41.81	
1.1.7.1. RENDEZVOUS (AVIONICS)	19.98	2.83	28.25	
1.1.7.2. DOCKING (MECHANICAL)	8.80	1.36	13.56	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		6.31	63.12	
1.1.9. PROGRAM MANAGEMENT	20.16	4.21	42.01	
1.1.10. SYSTEMS ENGRG & INTEGRATION	24.01	4.42	44.11	
1.1.11. SYSTEMS TEST ARTICLE	58.91			
1.1.12. SYSTEM TEST OPERATIONS	14.58			
1.1.13. GSE	13.73			
1.1.14. PSE				
1.1.15. FACILITIES	6.32			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE: UNITS PRODUCED 8.00 24.00

13.39.58. 01/25/80

ITEM 131 BUS TYPE 96GB CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDTEE PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDTEE PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	188.16	56.61	1673.97	1262.13
1.1.1. STRUCTURE	13.33	2.74	91.90	
1.1.1.1. STRUCTURE (PRIMARY)	6.51	2.36	44.79	
1.1.1.2. STRUCTURE (SECONDARY)	5.71	.37	7.11	
1.1.1.3. STRUCTURE (TOOLING)	1.11			
1.1.2. THERMAL CONTROL	3.05	.52	9.94	
1.1.3. ATTITUDE CONTROL	25.36	4.62	87.71	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	24.17	3.23	61.31	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.19	1.39	26.40	
1.1.4. REACTION CONTROL	16.09	5.24	99.45	
1.1.5. ELECTRICAL POWER	24.45	23.59	447.59	
1.1.5.1. SOLAR ARRAY	11.29	16.76	317.87	
1.1.5.2. BATTERIES	.34	2.11	40.10	
1.1.5.3. POWER COND & DIST	12.81	4.72	89.61	
1.1.6. TT&C	8.74	7.51	142.45	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		5.31	100.68	
1.1.9. PROGRAM MANAGEMENT	6.73	3.54	67.12	
1.1.10. SYSTEMS ENGRG & INTEGRATION	14.47	3.54	67.12	
1.1.11. SYSTEMS TEST ARTICLE	49.54			
1.1.12. SYSTEM TEST OPERATIONS	11.15			
1.1.13. GSE	9.10			
1.1.14. FSE				
1.1.15. FACILITIES	6.17			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE) UNITS PRODUCED 10.00 11.00

13.39.58. 01/25/80

ITEM 132 BUS TYPE 97JC CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDTEE PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDTEE PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	273.17	89.80	827.15	1100.32
1.1.1. STRUCTURE	13.51	2.80	25.79	
1.1.1.1. STRUCTURE (PRIMARY)	6.55	2.42	22.25	
1.1.1.2. STRUCTURE (SECONDARY)	5.61	.38	3.53	
1.1.1.3. STRUCTURE (TOOLING)	1.15			
1.1.2. THERMAL CONTROL	3.26	.63	5.82	
1.1.3. ATTITUDE CONTROL	34.97	9.20	84.78	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	33.04	7.44	68.55	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.92	1.76	16.23	
1.1.4. REACTION CONTROL	25.49	16.75	154.34	
1.1.5. ELECTRICAL POWER	33.32	29.26	269.54	
1.1.5.1. SOLAR ARRAY	15.65	21.10	194.37	
1.1.5.2. BATTERIES	.43	2.50	23.07	
1.1.5.3. POWER COND & DIST	17.24	5.66	52.11	
1.1.6. TT&C	11.52	11.28	103.93	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		8.39	77.30	
1.1.9. PROGRAM MANAGEMENT	9.03	5.59	51.54	
1.1.10. SYSTEMS ENGRG & INTEGRATION	21.35	5.87	54.11	
1.1.11. SYSTEMS TEST ARTICLE	78.33			
1.1.12. SYSTEM TEST OPERATIONS	19.39			
1.1.13. GSE	12.21			
1.1.14. FSE				
1.1.15. FACILITIES	16.60			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 8.00 18.00

13.39.58. 01/25/80

ITEM 133 BUS TYPE 98NA CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	214.70	69.21	1005.95	1220.65
1.1.1. STRUCTURE	15.36	3.95	57.38	
1.1.1.1. STRUCTURE (PRIMARY)	7.29	3.53	51.29	
1.1.1.2. STRUCTURE (SECONDARY)	6.20	.42	6.09	
1.1.1.3. STRUCTURE (TOOLING)	1.87			
1.1.2. THERMAL CONTROL	3.14	.57	8.28	
1.1.3. ATTITUDE CONTROL	26.20	5.56	80.80	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	24.85	4.07	59.19	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.34	1.49	21.61	
1.1.4. REACTION CONTROL	16.97	6.66	96.85	
1.1.5. ELECTRICAL POWER	28.76	28.59	415.49	
1.1.5.1. SOLAR ARRAY	12.99	20.14	292.67	
1.1.5.2. BATTERIES	.35	2.60	37.81	
1.1.5.3. POWER COND & DIST	15.42	5.85	85.01	
1.1.6. TT&C	8.97	8.75	127.11	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		6.49	94.31	
1.1.9. PROGRAM MANAGEMENT	7.30	4.33	62.87	
1.1.10. SYSTEMS ENGRG & INTEGRATION	15.60	4.33	62.87	
1.1.11. SYSTEMS TEST ARTICLE	60.56			
1.1.12, SYSTEM TEST OPERATIONS	13.63			
1.1.13. GSE	9.94			
1.1.14. FSE				
1.1.15. FACILITIES	8.62			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 10.00 9.[illegible]

13.39.58. 01/25/80

ITEM 134 BUS TYPE 98NE CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	294.55	81.00	619.62	914.17
1.1.1. STRUCTURE	15.38	3.95	30.25	
1.1.1.1. STRUCTURE (PRIMARY)	7.29	3.53	27.04	
1.1.1.2. STRUCTURE (SECONDARY)	6.22	.42	3.22	
1.1.1.3. STRUCTURE (TOOLING)	1.87			
1.1.2. THERMAL CONTROL	3.23	.62	4.72	
1.1.3. ATTITUDE CONTROL	33.11	6.57	50.28	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	31.44	4.94	37.82	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.67	1.63	12.46	
1.1.4. REACTION CONTROL	17.76	3.30	25.25	
1.1.5. ELECTRICAL POWER	36.99	33.16	253.65	
1.1.5.1. SOLAR ARRAY	17.11	23.71	181.37	
1.1.5.2. BATTERIES	.44	2.95	22.57	
1.1.5.3. POWER COND & DIST	19.44	6.50	49.70	
1.1.6. TT&C	11.48	11.08	84.77	
1.1.7. RENDEZVOUS & DOCKING	29.21	4.40	33.65	
1.1.7.1. RENDEZVOUS (AVIONICS)	20.15	2.99	22.85	
1.1.7.2. DOCKING (MECHANICAL)	9.05	1.41	10.80	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		7.57	57.91	
1.1.9. PROGRAM MANAGEMENT	10.89	5.05	38.61	
1.1.10. SYSTEMS ENGRG & INTEGRATION	25.74	5.30	40.54	
1.1.11. SYSTEMS TEST ARTICLE	70.66			
1.1.12. SYSTEM TEST OPERATIONS	17.49			
1.1.13. GSE	14.72			
1.1.14. FSE				
1.1.15. FACILITIES	7.89			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 8.00 18.00

13.39.58. 01/25/80

ITEM 135 BUS TYPE 98HB CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDTEE PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDTEE PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	209.38	67.01	973.92	1183.30
1.1.1. STRUCTURE	14.21	3.06	44.47	
1.1.1.1. STRUCTURE (PRIMARY)	6.72	2.64	38.39	
1.1.1.2. STRUCTURE (SECONDARY)	6.20	.42	6.09	
1.1.1.3. STRUCTURE (TOOLING)	1.29			
1.1.2. THERMAL CONTROL	3.14	.57	8.28	
1.1.3. ATTITUDE CONTROL	25.92	5.23	76.07	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	24.63	3.78	54.93	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.29	1.45	21.14	
1.1.4. REACTION CONTROL	16.67	6.16	89.52	
1.1.5. ELECTRICAL POWER	28.75	28.58	415.43	
1.1.5.1. SOLAR ARRAY	12.99	20.14	292.67	
1.1.5.2. BATTERIES	.35	2.60	37.81	
1.1.5.3. POWER COND & DIST	15.41	5.85	84.95	
1.1.6. TT&C	8.97	8.75	127.11	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		6.28	91.31	
1.1.9. PROGRAM MANAGEMENT	7.23	4.19	60.87	
1.1.10. SYSTEMS ENGRG & INTEGRATION	15.53	4.19	60.87	
1.1.11. SYSTEMS TEST ARTICLE	58.63			
1.1.12. SYSTEM TEST OPERATIONS	13.19			
1.1.13. GSE	9.77			
1.1.14. PSE				
1.1.15. FACILITIES	7.36			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE) UNITS PRODUCED 16.00 9.60

13.39.58. 01/25/80

ITEM 136 BUS TYPE 98HF CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDTEE PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDTEE PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	269.65	79.15	625.44	895.09
1.1.1. STRUCTURE	14.24	3.07	23.47	
1.1.1.1. STRUCTURE (PRIMARY)	6.72	2.65	20.25	
1.1.1.2. STRUCTURE (SECONDARY)	6.22	.42	3.22	
1.1.1.3. STRUCTURE (TOOLING)	1.29			
1.1.2. THERMAL CONTROL	3.23	.62	4.72	
1.1.3. ATTITUDE CONTROL	32.81	6.24	47.73	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	31.20	4.64	35.50	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.61	1.60	12.23	
1.1.4. REACTION CONTROL	17.49	3.08	23.56	
1.1.5. ELECTRICAL POWER	36.98	33.15	253.62	
1.1.5.1. SOLAR ARRAY	17.11	23.71	181.37	
1.1.5.2. BATTERIES	.44	2.95	22.57	
1.1.5.3. POWER COND & DIST	19.43	6.49	49.67	
1.1.6. ITEC	11.48	11.08	84.77	
1.1.7. RENDEZVOUS & DOCKING	29.21	4.40	33.65	
1.1.7.1. RENDEZVOUS (AVIONICS)	20.15	2.99	22.65	
1.1.7.2. DOCKING (MECHANICAL)	9.05	1.41	10.80	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		7.40	56.58	
1.1.9. PROGRAM MANAGEMENT	10.76	4.93	37.72	
1.1.10. SYSTEMS ENGRG & INTEGRATION	25.44	5.18	39.61	
1.1.11. SYSTEMS TEST ARTICLE	69.04			
1.1.12. SYSTEM TEST OPERATIONS	17.09			
1.1.13. GSE	14.54			
1.1.14. FSE				
1.1.15. FACILITIES	7.34			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 16.00 7.CC

13.39.58. 01/25/80

ITEM 137 BUS TYPE 66JC* CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	325.47	99.03	600.26	925.73
1.1.1. STRUCTURE	14.69	3.24	19.63	
1.1.1.1. STRUCTURE (PRIMARY)	6.83	2.79	16.94	
1.1.1.2. STRUCTURE (SECONDARY)	6.48	.44	2.69	
1.1.1.3. STRUCTURE (TOOLING)	1.38			
1.1.2. THERMAL CONTROL	3.40	.71	4.29	
1.1.3. ATTITUDE CONTROL	34.52	8.51	51.57	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	32.68	6.79	41.15	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.84	1.72	10.42	
1.1.4. REACTION CONTROL	22.69	8.80	53.35	
1.1.5. ELECTRICAL POWER	41.79	38.38	232.64	
1.1.5.1. SOLAR ARRAY	19.05	27.28	165.36	
1.1.5.2. BATTERIES	.44	3.49	21.14	
1.1.5.3. POWER COND & DIST	22.30	7.61	46.14	
1.1.6. TT&C	11.89	13.58	82.28	
1.1.7. RENDEZVOUS & DOCKING	25.77	3.91	23.72	
1.1.7.1. RENDEZVOUS (AVIONICS)	20.37	3.21	19.44	
1.1.7.2. DOCKING (MECHANICAL)	5.39	.71	4.28	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		9.26	56.10	
1.1.9. PROGRAM MANAGEMENT	11.41	6.17	37.40	
1.1.10. SYSTEMS ENGRG & INTEGRATION	26.96	6.48	39.27	
1.1.11. SYSTEMS TEST ARTICLE	86.38			
1.1.12. SYSTEM TEST OPERATIONS	21.38			
1.1.13. GSE	15.41			
1.1.14. FSE				
1.1.15. FACILITIES	9.79			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE & UNITS PRODUCED 10.00 7.00

14.30.24. 01/29/80

ITEM 138 -RERUN- BUS TYPE 66KC CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	317.76	112.72	683.25	1001.01
1.1.1. STRUCTURE	14.69	3.24	19.63	
1.1.1.1. STRUCTURE (PRIMARY)	6.83	2.79	16.94	
1.1.1.2. STRUCTURE (SECONDARY)	6.48	.44	2.69	
1.1.1.3. STRUCTURE (TOOLING)	1.38			
1.1.2. THERMAL CONTROL	3.40	.71	4.29	
1.1.3. ATTITUDE CONTROL	36.09	11.17	67.64	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	33.95	9.30	56.36	
1.1.3.2. ATTITUDE CONTROL (AMCD)	2.14	1.87	11.33	
1.1.4. REACTION CONTROL	26.74	20.75	129.79	
1.1.5. ELECTRICAL POWER	41.71	38.35	232.45	
1.1.5.1. SOLAR ARRAY	19.05	27.28	165.36	
1.1.5.2. BATTERIES	.44	3.49	21.14	
1.1.5.3. POWER COND & DIST	22.22	7.58	45.95	
1.1.6. TT&C	11.89	13.58	82.28	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)		10.54	63.86	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		7.02	42.57	
1.1.9. PROGRAM MANAGEMENT	9.95	7.37	44.70	
1.1.10. SYSTEMS ENGRG & INTEGRATION	23.53			
1.1.11. SYSTEMS TEST ARTICLE	98.33			
1.1.12. SYSTEM TEST OPERATIONS	24.34			
1.1.13. GSE	13.45			
1.1.14. FSE				
1.1.15. FACILITIES	13.65			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 6.00 12.00

13.39.58. 01/25/80

ITEM 139 BUS TYPE 6FJB CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDTEE PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDTEE PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	260.01			1186.00
1.1.1. STRUCTURE		92.74	925.98	
1.1.1.1. STRUCTURE (PRIMARY)	16.30	3.86	38.59	
1.1.1.2. STRUCTURE (SECONDARY)	7.17	3.34	33.30	
1.1.1.3. STRUCTURE (TOOLING)	7.39	.53	5.28	
1.1.2. THERMAL CONTROL	1.74			
1.1.3. ATTITUDE CONTROL	3.36	.69	6.90	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	27.68	6.73	67.21	
1.1.3.2. ATTITUDE CONTROL (AMCD)	25.57	5.14	51.37	
1.1.4. REACTION CONTROL	1.51	1.59	15.84	
1.1.5. ELECTRICAL POWER	17.88	8.44	84.27	
1.1.5.1. SOLAR ARRAY	38.62	40.91	408.50	
1.1.5.2. BATTERIES	16.91	28.42	283.79	
1.1.5.3. POWER COND & DIST	.36	3.98	39.77	
1.1.6. TT&C	21.34	8.51	84.94	
1.1.7. RENDEZVOUS & DOCKING	9.44	11.81	117.96	
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O				
1.1.9. PROGRAM MANAGEMENT		8.69	86.81	
1.1.10. SYSTEMS ENGRG & INTEGRATION	8.34	5.80	57.87	
1.1.11. SYSTEMS TEST ARTICLE	17.92	5.80	57.87	
1.1.12. SYSTEM TEST OPERATIONS	81.15			
1.1.13. GSE	18.26			
1.1.14. FSE	11.27			
1.1.15. FACILITIES	10.39			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 10.00 6.00

13.39.58. 01/25/80

ITEM 140 BUS TYPE 68JE CASE III

GEUSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEUPLATFORM (BUS) -TOTAL	348.81	107.24	563.54	912.35
1.1.1. STRUCTURE	16.33	3.87	20.36	
1.1.1.1. STRUCTURE (PRIMARY)	7.18	3.34	17.57	
1.1.1.2. STRUCTURE (SECONDARY)	7.41	.53	2.79	
1.1.1.3. STRUCTURE (TOOLING)	1.74			
1.1.2. THERMAL CONTROL	3.46	.75	3.92	
1.1.3. ATTITUDE CONTROL	34.23	8.00	42.01	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	32.36	6.26	32.88	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.88	1.74	9.13	
1.1.4. REACTION CONTROL	18.71	4.18	21.95	
1.1.5. ELECTRICAL POWER	49.44	47.03	247.13	
1.1.5.1. SOLAR ARRAY	22.14	33.22	174.59	
1.1.5.2. BATTERIES	.45	4.38	23.03	
1.1.5.3. POWER COND & DIST	26.84	9.42	49.52	
1.1.6. TT&C	12.05	14.73	77.43	
1.1.7. RENDEZVOUS & DOCKING	30.28	4.97	26.10	
1.1.7.1. RENDEZVOUS (AVIONICS)	20.58	3.42	17.96	
1.1.7.2. DOCKING (MECHANICAL)	9.70	1.55	8.14	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		10.02	52.67	
1.1.9. PROGRAM MANAGEMENT	12.17	6.68	35.11	
1.1.10. SYSTEMS ENGRG & INTEGRATION	28.77	7.02	36.87	
1.1.11. SYSTEMS TEST ARTICLE	93.54			
1.1.12. SYSTEM TEST OPERATIONS	23.15			
1.1.13. GSE	16.45			
1.1.14. FSE				
1.1.15. FACILITIES	10.22			

Table I-3. High Traffic Model Cost Runs, Contd

12.25.31. 01/21/80

ITEM 141 BUS TYPE 68LE CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	348.72	108.09	568.00	916.72
1.1.1. STRUCTURE	17.37	4.73	24.86	
1.1.1.1. STRUCTURE (PRIMARY)	7.65	4.20	22.06	
1.1.1.2. STRUCTURE (SECONDARY)	7.38	.53	2.77	
1.1.1.3. STRUCTURE (TOOLING)	2.34			
1.1.2. THERMAL CONTROL	3.45	.74	3.89	
1.1.3. ATTITUDE CONTROL	34.40	8.23	43.25	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	32.49	6.48	34.04	
1.1.3.2. ATTITUDE CONTROL (AMCO)	1.91	1.75	9.22	
1.1.4. REACTION CONTROL	18.85	4.32	22.69	
1.1.5. ELECTRICAL POWER	49.44	47.03	247.13	
1.1.5.1. SOLAR ARRAY	22.14	33.22	174.59	
1.1.5.2. BATTERIES	.45	4.38	23.03	
1.1.5.3. POWER COND & DIST	26.84	9.42	49.52	
1.1.6. TT&C	12.04	14.66	77.03	
1.1.7. RENDEZVOUS & DOCKING	27.93	4.47	23.51	
1.1.7.1. RENDEZVOUS (AVIONICS)	20.56	3.40	17.88	
1.1.7.2. DOCKING (MECHANICAL)	7.36	1.07	5.63	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		10.10	53.06	
1.1.9. PROGRAM MANAGEMENT	12.10	6.73	35.39	
1.1.10. SYSTEMS ENGRG & INTEGRATION	28.59	7.07	37.16	
1.1.11. SYSTEMS TEST ARTICLE	94.28			
1.1.12. SYSTEM TEST OPERATIONS	23.33			
1.1.13. GSE	16.35			
1.1.14. FSE				
1.1.15. FACILITIES	10.59			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 10.00 5.00

13.39.58. 01/25/80

ITEM 142 BUS TYPE 95KC* CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GLOPLATFORM (BUS) -TOTAL	418.76	146.24	649.10	1067.86
1.1.1. STRUCTURE	17.48	4.33	19.23	
1.1.1.1. STRUCTURE (PRIMARY)	7.40	3.74	16.60	
1.1.1.2. STRUCTURE (SECONDARY)	8.66	.59	2.64	
1.1.1.3. STRUCTURE (TOOLING)	2.61			
1.1.2. THERMAL CONTROL	3.70	.90	4.00	
1.1.3. ATTITUDE CONTROL	36.53	12.03	53.39	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	34.30	10.12	44.91	
1.1.3.2. ATTITUDE CONTROL (AMCD)	2.23	1.91	8.48	
1.1.4. REACTION CONTROL	24.06	12.91	57.31	
1.1.5. ELECTRICAL POWER	60.08	59.58	264.44	
1.1.5.1. SOLAR ARRAY	26.46	41.80	185.55	
1.1.5.2. BATTERIES	.46	5.72	25.40	
1.1.5.3. POWER COND & DIST	33.22	12.05	53.48	
1.1.6. TT&C	12.63	19.44	86.31	
1.1.7. RENDEZVOUS & DOCKING	26.94	4.70	20.85	
1.1.7.1. RENDEZVOUS (AVIONICS)	20.99	3.89	17.27	
1.1.7.2. DOCKING (MECHANICAL)	5.95	.81	3.58	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		13.67	60.66	
1.1.9. PROGRAM MANAGEMENT	13.43	9.11	40.44	
1.1.10. SYSTEMS ENGRG & INTEGRATION	31.73	9.57	42.46	
1.1.11. SYSTEMS TEST ARTICLE	127.56			
1.1.12. SYSTEM TEST OPERATIONS	31.57			
1.1.13. GSE	10.14			
1.1.14. FSE				
1.1.15. FACILITIES	14.90			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE UNITS PRODUCED 8.00 8.00

13.39.58. 01/25/80

ITEM 143 BUS TYPE 100KB CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	337.06	133.36	914.73	1251.79
1.1.1. STRUCTURE	18.99	4.99	34.24	
1.1.1.1. STRUCTURE (PRIMARY)	7.71	4.32	29.62	
1.1.1.2. STRUCTURE (SECONDARY)	8.86	.67	4.62	
1.1.1.3. STRUCTURE (TOOLING)	2.42			
1.1.2. THERMAL CONTROL	3.62	.85	5.32	
1.1.3. ATTITUDE CONTROL	28.43	8.96	61.48	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	26.65	7.23	49.58	
1.1.3.2. ATTITUDE CONTROL (AMCD)	1.78	1.73	11.90	
1.1.4. REACTION CONTROL	19.23	11.69	80.16	
1.1.5. ELECTRICAL POWER	54.28	61.65	422.84	
1.1.5.1. SOLAR ARRAY	22.88	42.21	289.55	
1.1.5.2. BATTERIES	.37	6.34	43.50	
1.1.5.3. POWER COND & DIST	31.02	13.09	89.80	
1.1.6. TT&C	9.94	16.05	110.09	
1.1.7. RENDEZVOUS & DOCKING				
1.1.7.1. RENDEZVOUS (AVIONICS)				
1.1.7.2. DOCKING (MECHANICAL)				
1.1.8. INTEGRATION, ASSEMBLY, & C/O		12.50	85.76	
1.1.9. PROGRAM MANAGEMENT	9.95	8.34	57.17	
1.1.10. SYSTEMS ENGRG & INTEGRATION	21.38	8.34	57.17	
1.1.11. SYSTEMS TEST ARTICLE	116.69			
1.1.12. SYSTEM TEST OPERATIONS	26.26			
1.1.13. GSE	13.45			
1.1.14. FSE				
1.1.15. FACILITIES	14.83			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 10.00 4.00

13.39.56. 01/25/80

ITEM 144 BUS TYPE 10GKE CASE III

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	ROTEE PHASE COST	FIRST UNIT COST	PROD PHASE COST	ROTEE PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	440.47	152.86	551.83	992.30
1.1.1. STRUCTURE	10.93	4.93	17.80	
1.1.1.1. STRUCTURE (PRIMARY)	7.68	4.26	15.36	
1.1.1.2. STRUCTURE (SECONDARY)	0.88	.68	2.44	
1.1.1.3. STRUCTURE (TOOLING)	2.38			
1.1.2. THERMAL CONTROL	3.72	.92	3.31	
1.1.3. ATTITUDE CONTROL	35.88	16.60	38.26	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	33.68	8.70	31.42	
1.1.3.2. ATTITUDE CONTROL (AMCD)	2.20	1.90	6.84	
1.1.4. REACTION CONTROL	20.08	5.74	20.76	
1.1.5. ELECTRICAL POWER	69.51	71.08	256.59	
1.1.5.1. SOLAR ARRAY	30.10	49.63	179.16	
1.1.5.2. BATTERIES	.47	6.98	25.16	
1.1.5.3. POWER COND & DIST	38.94	14.47	52.24	
1.1.6. TT&C	12.70	20.02	72.29	
1.1.7. RENDEZVOUS & DOCKING	31.69	5.77	20.82	
1.1.7.1. RENDEZVOUS (AVIONICS)	21.11	4.03	14.55	
1.1.7.2. DOCKING (MECHANICAL)	10.59	1.74	6.28	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		14.29	51.57	
1.1.9. PROGRAM MANAGEMENT	14.25	9.52	34.38	
1.1.10. SYSTEMS ENGRG & INTEGRATION	33.67	10.06	36.10	
1.1.11. SYSTEMS TEST ARTICLE	133.34			
1.1.12. SYSTEM TEST OPERATIONS	33.60			
1.1.13. GSE	19.29			
1.1.14. PSE				
1.1.15. FACILITIES	14.45			

Table I-3. High Traffic Model Cost Runs, Contd

SYSTEM LIFE; UNITS PRODUCED 8.00 1.00

12.28.51. 01/30/80

ITEM 0 BUS TYPE DEMO

GEOSTATIONARY PLATFORM PROGRAM COSTS (1980$M)

	RDT&E PHASE COST	FIRST UNIT COST	PROD PHASE COST	RDT&E PLUS PROD
1.1. GEOPLATFORM (BUS) -TOTAL	141.34	34.61	34.61	175.94
1.1.1. STRUCTURE	13.70	2.41	2.41	
1.1.1.1. STRUCTURE (PRIMARY)	6.17	1.95	1.95	
1.1.1.2. STRUCTURE (SECONDARY)	6.65	.46	.46	
1.1.1.3. STRUCTURE (TOOLING)	.87			
1.1.2. THERMAL CONTROL	3.81	.98	.98	
1.1.3. ATTITUDE CONTROL	22.51	2.94	2.94	
1.1.3.1. ATTITUDE CONTROL (AVIONICS)	21.64	1.30	1.30	
1.1.3.2. ATTITUDE CONTROL (AMCD)	.87	1.64	1.64	
1.1.4. REACTION CONTROL	14.26	3.05	3.05	
1.1.5. ELECTRICAL POWER	11.30	9.09	9.09	
1.1.5.1. SOLAR ARRAY	5.01	6.72	6.72	
1.1.5.2. BATTERIES	.31	.63	.63	
1.1.5.3. POWER COND & DIST	5.38	1.74	1.74	
1.1.6. TT&C	8.70	7.30	7.30	
1.1.7. RENDEZVOUS & DOCKING	15.69	1.26	1.26	
1.1.7.1. RENDEZVOUS (AVIONICS)	13.96	1.07	1.07	
1.1.7.2. DOCKING (MECHANICAL)	1.73	.19	.19	
1.1.8. INTEGRATION, ASSEMBLY, & C/O		3.24	3.24	
1.1.9. PROGRAM MANAGEMENT	6.66	2.16	2.16	
1.1.10. SYSTEMS ENGRG & INTEGRATION	14.31	2.16	2.16	
1.1.11. SYSTEMS TEST ARTICLE	15.14			
1.1.12. SYSTEM TEST OPERATIONS	3.41			
1.1.13. GSE	9.00			
1.1.14. FSE				
1.1.15. FACILITIES	2.36			

APPENDIX J

FUNDING SPREAD ANALYSIS

APPENDIX J

FUNDING SPREAD ANALYSIS

Funding spreads were generated for the four candidates shown in Table J-1. The cost of each major cost element was spread according to a top level milestone schedule and then accumulated to provide annual funding requirements.

Figure J-1 shows the annual funding requirements for the individual satellite case (Item 148). Costs are tallied for the platform bus and payloads (development and production) and for STS transportation. These funding requirements reflect a nearly constant rate of production and launch of these satellites. This program includes 326 satellites launched over a 16 year period.

Annual funding requirements are shown in Figure J-2 for Item 84 including each of the major program components. This program includes 3 modules launched over a 5 year period and 7 servicing flights over a 14 year period (Operational Mode E).

Figure J-3 shows the annual funding requirements for Item 276 including each of the major program components. This program includes 14 modules launched over an 8 year period and 2 servicing flights (Operational Mode C').

Annual funding requirements are shown in Figure J-4 for Item 337 including each of the major program components. This program includes 5 modules launched over an 8 year period and 2 servicing flights.

The total annual funding requirements for the principal candidates are compared on Figure J-5. Item 337 shows minimum cost and both Items 337 and 276 provide lower early year funding than Item 84. The individual satellite case (Item 148) is also shown for reference. The total program funding requirements shown include costs for bus, payloads and transportation.

The total annual funding requirements, excluding payloads, for the principal candidates are compared on Figure J-6. Item 337 shows minimum cost and both Items 337 and 276 provide lower early year funding than Item 84. The individual satellite case Item 148 is shown for comparison.

Figure J-7 compares the total annual funding requirement, excluding payloads, for the three principal candidates. Item 337 shows minimum cost and both Items 337 and 276 provide lower early year funding than Item 84. The same data are plotted in Figure J-8 with an expanded scale to accentuate the differences.

The final cost results of the candidate options are shown in Table J-2 together with the individual satellite case for comparison. Total program costs are shown

as are program cost excluding the cost of the payloads themselves. Costs are shown in 1980 constant dollars together with the net present value assuming a 10% discount rate.

As may be seen, Item 337 shows minimum cost followed by Items 276 and 84. This trend is also confirmed when discounted dollars are considered.

All of the potential options are at least a factor of four cheaper than the individual satellite case for the accomplishment of the assumed mission model.

Table J-1. Funding Spread Analysis (Mission Set V Throughout)

ITEM 148	BEST SATELLITE OPTION (IUS/STD. TDRSS BUS/MULT. P/L)
ITEM 84	BEST FREQUENTLY SERVICED OPTION
ITEM 276	BEST CASE II (MODULE & OTV IN SINGLE SHUTTLE)
ITEM 337	BEST OVERALL OPTION

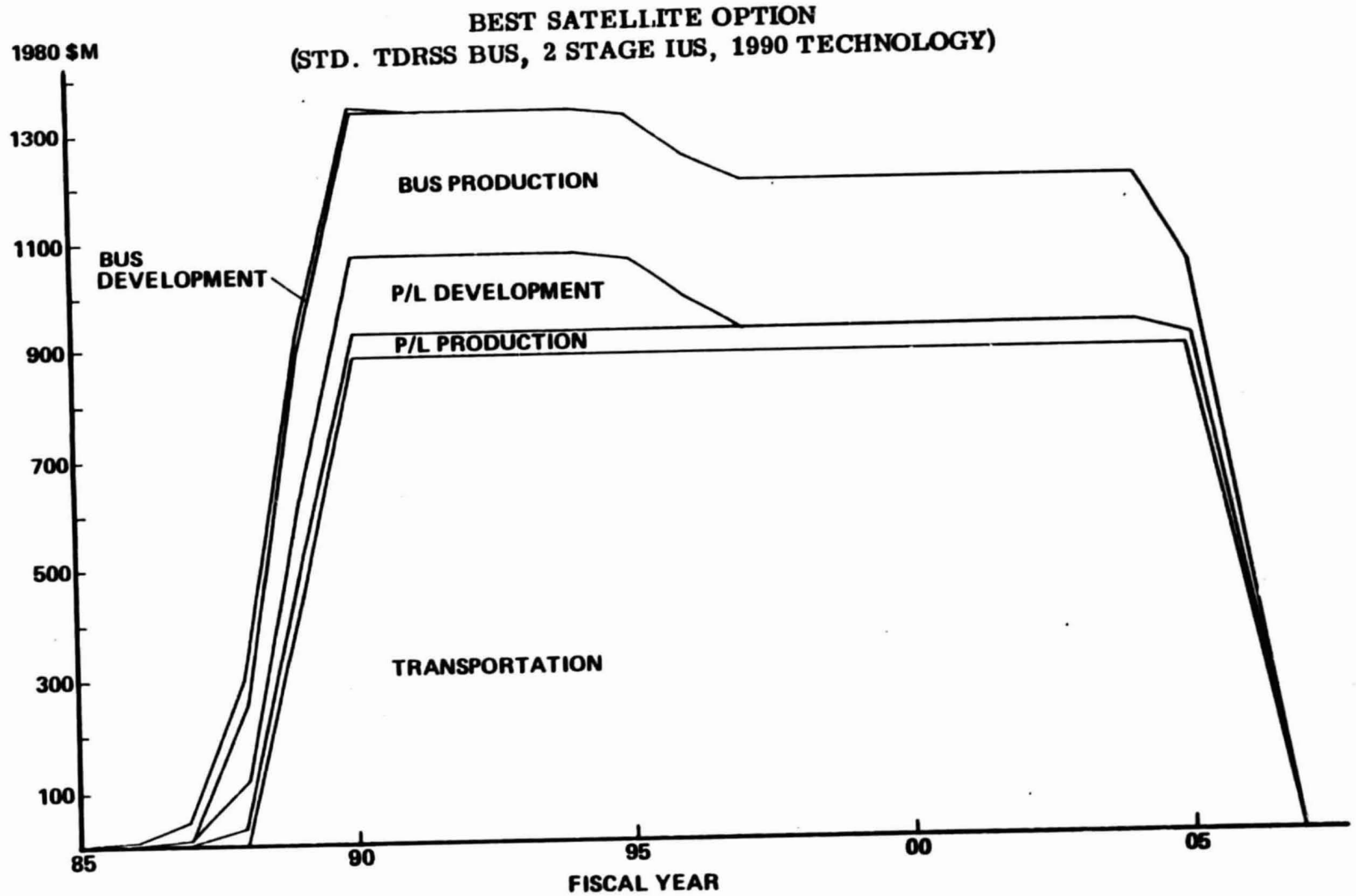

Figure J-1. Item 148 Annual Funding Requirements

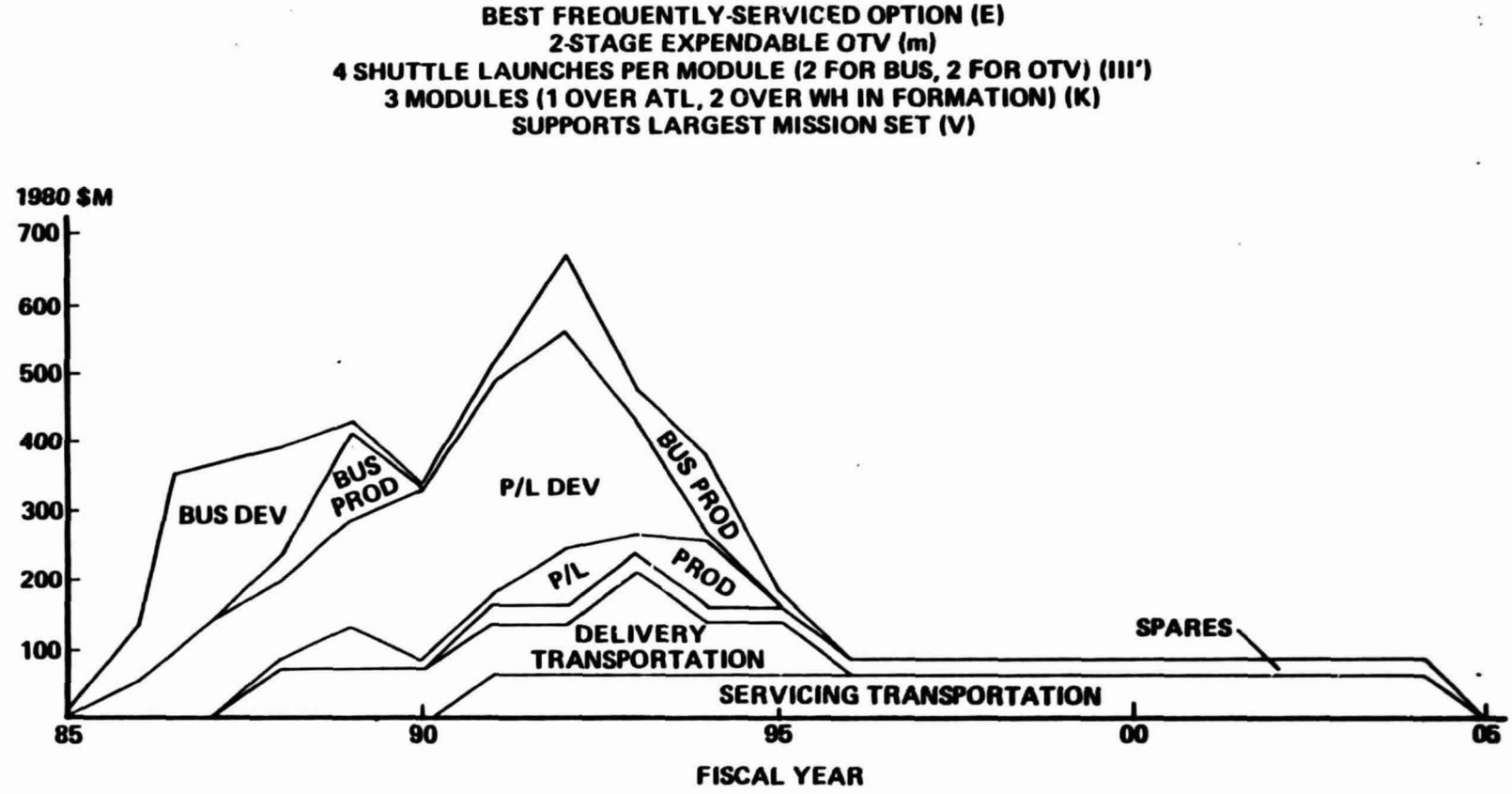

Figure J-2. Item 84 Annual Funding Requirements

BEST CASE II (SINGLE-SHUTTLE) OPTION
SINGLE-STAGE EXPENDABLE OTV (d)
HIGHLY REDUNDANT MODULES, SERVICED EVERY 8 YEARS (C')
14 MODULES DOCKED AT GEO (7 OVER WH, 7 OVER ATL), SHARING SUBSYSTEMS (J)
SUPPORTS LARGEST MISSION SET (V)

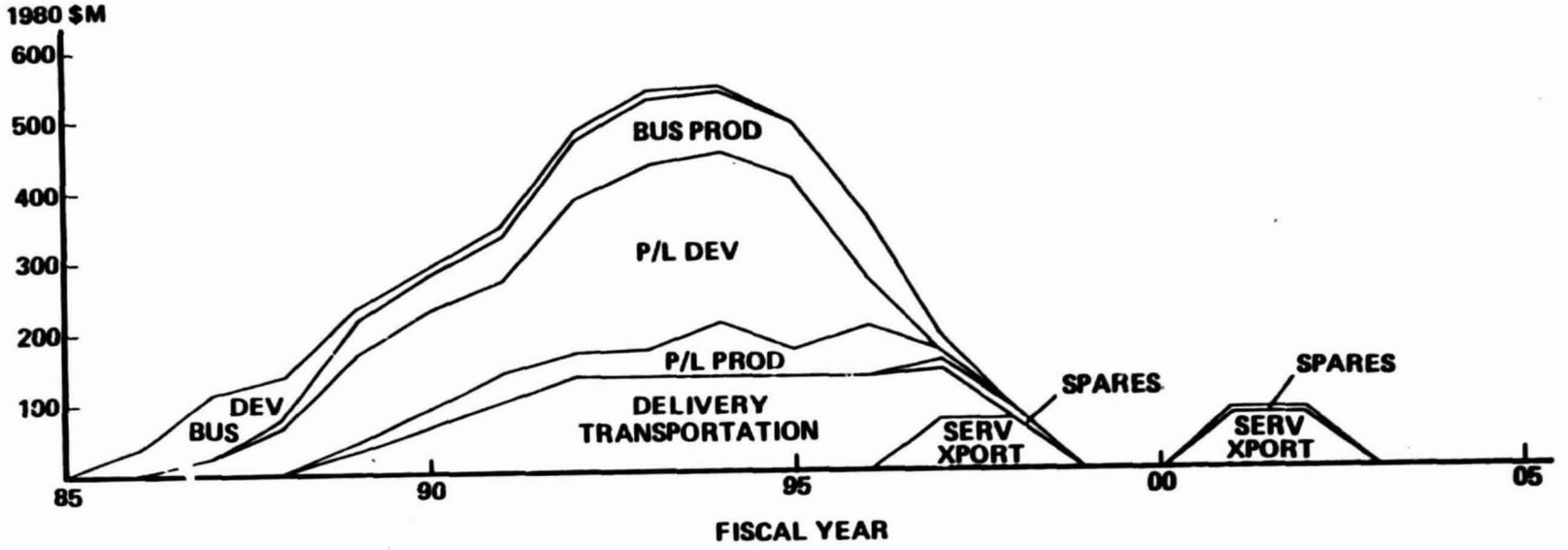

Figure J-3. Item 276 Annual Funding Requirements

BEST OVERALL OPTION
2-STAGE REUSABLE LOW THRUST OTV (j)
SPACE-MATED (CASE III)
HIGHLY REDUNDANT MODULES, SERVICED EVERY 8 YEARS (C')
5 MODULES DOCKED AT GEO (2 OVER WH, 3 OVER ATL), SHARING SUBSYSTEMS (J)
SUPPORTS LARGEST MISSION SET (V)

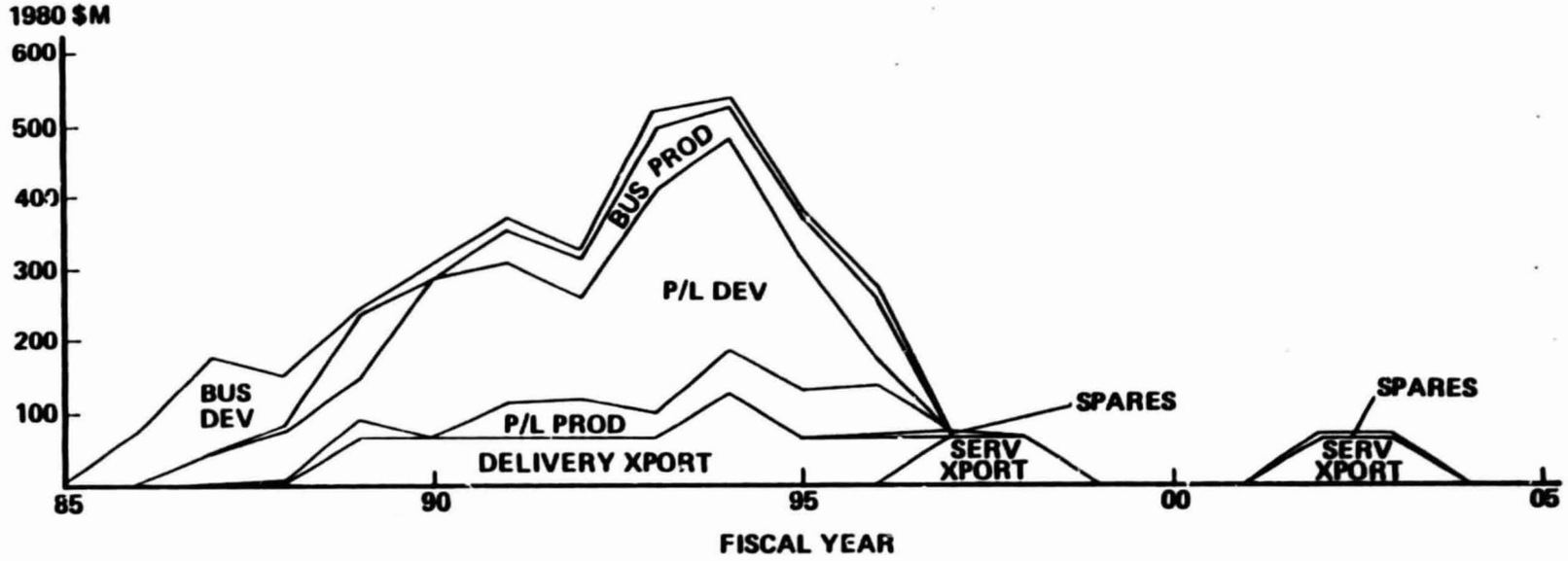

Figure J-4. Item 337 Annual Funding Requirements

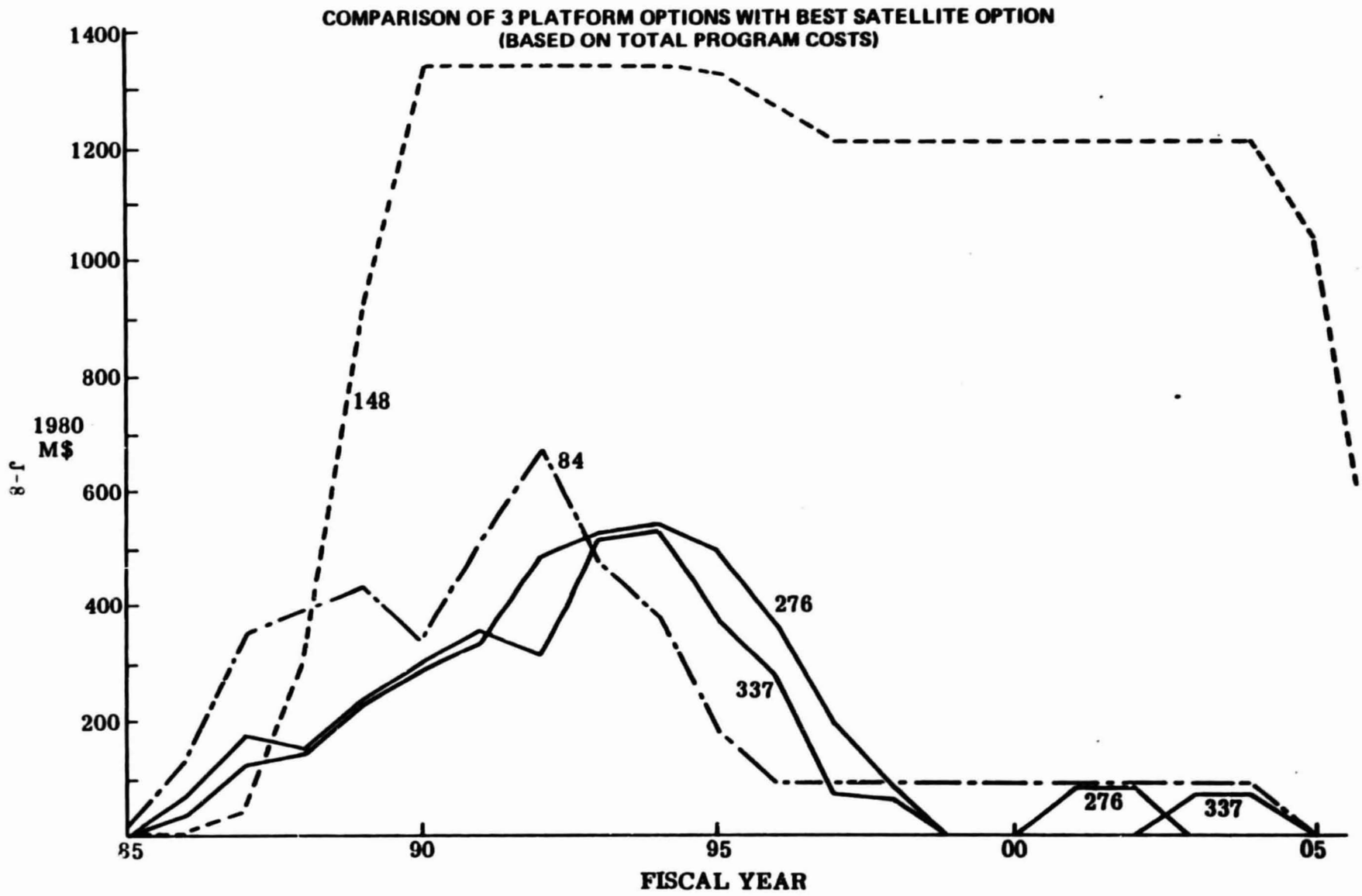

Figure J-5. Comparison of Four Options

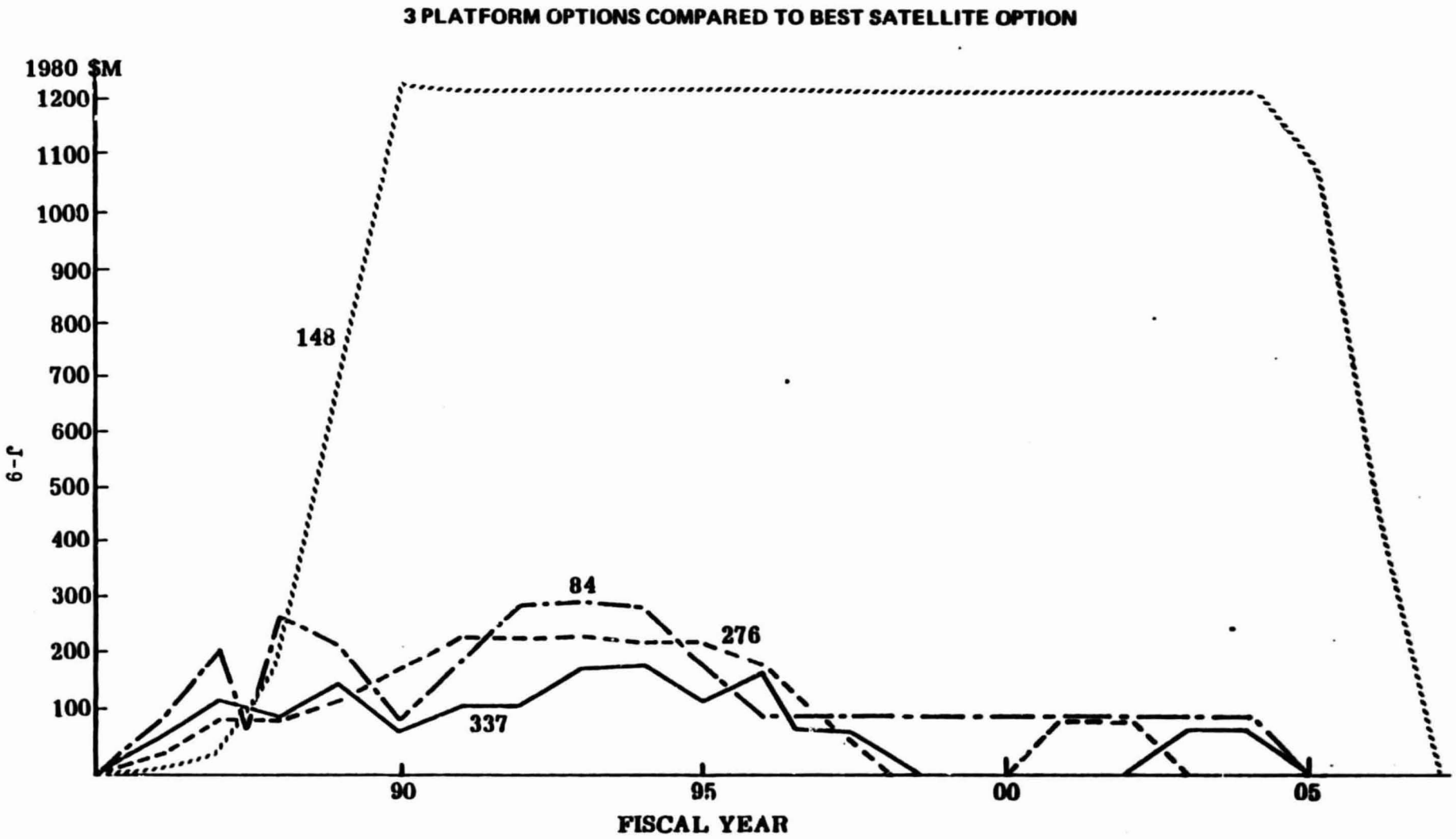

Figure J-6. Comparison of Four Options, Excluding Payload Costs

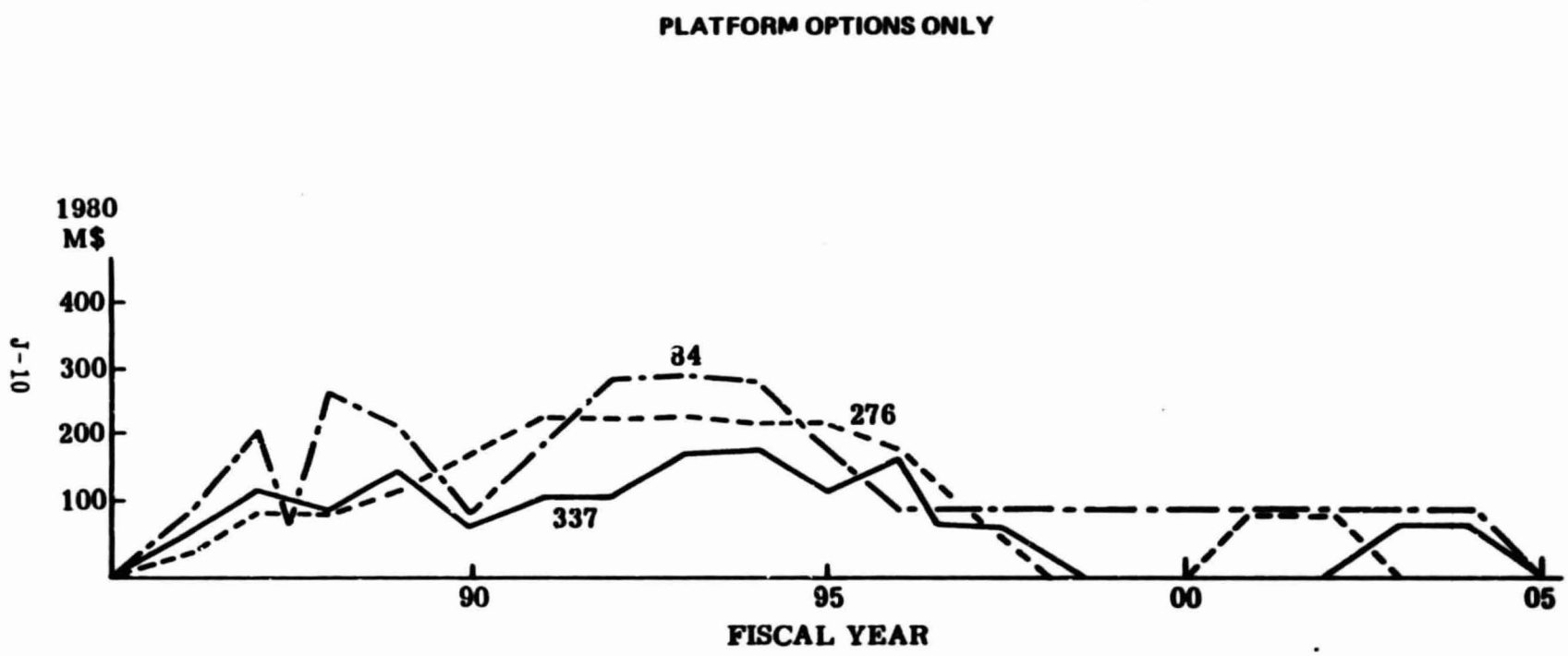

Figure J-7. Comparison of Three Platform Options

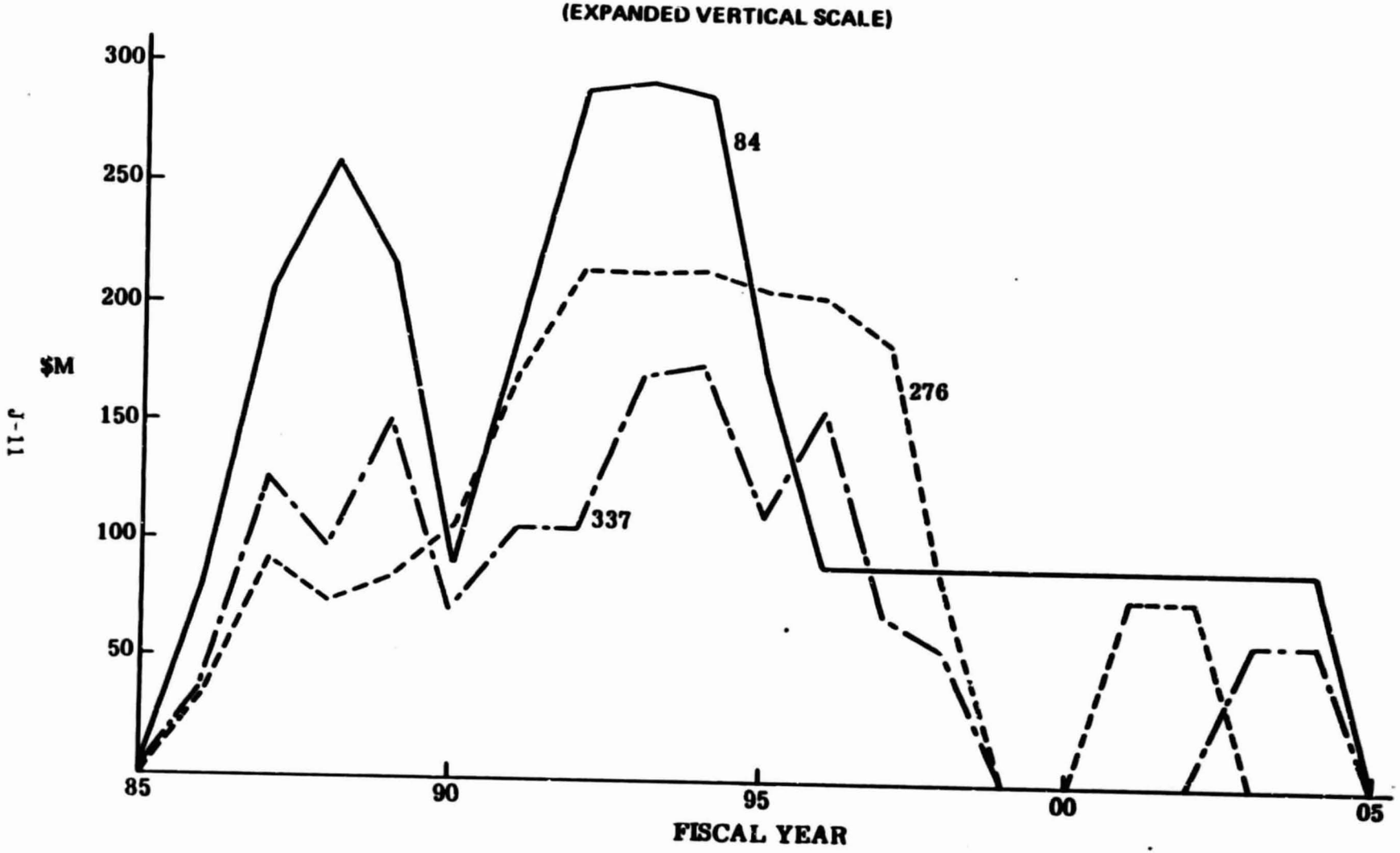

Figure J-8. Comparison of Three Platform Options (Expanded Scale)

Table J-2. Final Results

ITEM #	TOTAL PROGRAM COSTS		COST W/O PAYLOADS	
	1980 $M	NPV $M	1980 $M	NPV $M
* 337	3460	1564	1696	787
† 276	3997	1740	2122	893
84	4703	2285	3870	1283
148	21659	7790	19662	6858

* RECOMMENDED BASELINE CONCEPT

† RECOMMENDED BACKUP CONCEPT

APPENDIX K

RADIATION ENVIRONMENT OF INTELSAT V

RADIATION ENVIRONMENT

PREFACE

Hereafter the radiation environment used for the INTELSAT V design is given as a reference. The contractor shall consider this as preliminary and subject to future updating.

1. INTRODUCTION

The selection of spacecraft components shall be such as to insure all performance specifications are met during operation in the space environment. Since this environmental model is a best estimate set forth below for a seven-year mission commencing in 1978, based on available experimental data, it is anticipated that modifications of the model, as mutually agreed upon by INTELSAT and the contractor may be desirable at some date prior to acceptance of the design definition.

2. SYNCHRONOUS ORBIT CONDITIONS

2.1 Electrons

The electron environment in synchronous equatorial orbit based on te's AE4 model, can be represented by the following expressions for time-averaged integral flux spectrum:

$E \leq 0.3$ MeV: $\log_{10} \Phi_e(>E) = -3.0E + 7.7$

$0.30 \leq E \leq 3.5$ MeV: $\log_{10} \Phi_e(>E) = -1.25E + 7.2$

The flux represents the number of electrons per cm^2 per sec above ergy E (in MeV).

2 Protons

The integral proton fluence spectrum for the mission is to be epresented by the following expressions:

$.01 \leq E \leq 1.0$ MeV: $\Phi_p(>E) = 6.5 \times 10^{15} \exp(-9.0E)\ p/cm^2/\ 7$ years

$.0 \leq E$ MeV: $\Phi_p(>E) = 1.5 \times 10^{12} E^{-1.53}$ $p/cm^2/cycle$

The low energy portion of the spectrum is mainly from the trapped radiation environment and is relatively constant with time.

The high energy portion of this spectrum, which represents the solar flare content of the worst known period (cycle 19) is a conservative estimate. Since major solar flares can occur at any time, the spectrum is represented for the whole cycle and cannot be predicted on any other time base.

2.3 Alpha Particles

The alpha particle integral fluence is to be taken as 5% of the above proton fluence.

2.4 Ultraviolet Radiation

The UV spectrum normalized to the Johnson curves for a solar constant at 1 AU of 0.14 watts/cm^2 is summarized in the following table.

Wavelenght (Å)	Fraction of Total Energy below hc/λ	Energy (ergs/cm^2/yr)
1.0	$\sim 10^{-11}$	$10^2 - 10^3$
10	$\sim 10^{-8}$	$10^5 - 10^6$
100	$\sim 10^{-6}$	$10^7 - 10^8$
500	$\sim 10^{-6}$	1×10^8
1000	$\sim 10^{-5}$	4×10^8
1500	0.6×10^{-4}	2.5×10^9
2000	1.5×10^{-4}	6.0×10^9
2500	2.1×10^{-3}	9.0×10^{10}
3000	1.2×10^{-2}	5.0×10^{11}
4000	9.0×10^{-2}	4.0×10^{12}
5000	2.4×10^{-1}	1.1×10^{13}

2.5 Micrometeoroids

The flux of penetrating micrometeoroids encountered at synchronous altitude is to be taken from the following table.

T (cm)	$\Phi_{m(m^{-2}Day^{-1})}$
0.001	7.0×10^{-1}
0.004	3.5×10^{-1}
0.010	1.0×10^{-1}
0.040	7.0×10^{-3}
0.10	6.0×10^{-4}
0.40	1.0×10^{-5}
1.0	5.0×10^{-7}
4.0	4.5×10^{-9}

Where "T" is the penetration thickness in aluminum and Φ_m is the number of micrometeoroids per day penetrating this thickness over a 1.0 square meter area. The crater diameter produced by a particle impact is to be taken as five times the particle penetration thickness.

3. TRANSFER ORBIT CONDITIONS

Contributions from natural radiation sources may be considered to have negligible effect during the transfer orbits as long as the number of orbits is low (<20).

APPENDIX L

THE SPACE RADIATION AT SYNCHRONOUS ALTITUDE AND ITS EFFECTS ON COMMUNICATION SATELLITES

AIAA Paper
No. 70-481

THE SPACE RADIATION ENVIRONMENT AT SYNCHRONOUS ALTITUDE AND ITS EFFECTS ON COMMUNICATION SATELLITES

by
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Clarksburg, Maryland

AIAA 3rd Communications Satellite Systems Conference

LOS ANGELES, CALIFORNIA/APRIL 6-8, 1970

THE SPACE RADIATION ENVIRONMENT AT SYNCHRONOUS ALTITUDE AND ITS EFFECTS ON COMMUNICATION SATELLITES *

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Clarksburg, Maryland

Abstract

An extensive study has been performed to evaluate the radiation environment encountered by a synchronous communications satellite and to analyze the effect of this environment on photovoltaic power sources. The results of this study, which are based on the latest available satellite and laboratory data, have been formulated into a working engineering model designed for use in predicting satellite performance and operational lifetime. This model is presented graphically and analytically in the form of trapped electron and proton fluences and solar proton fluence as a function of particle energy. In addition, curves are presented showing equivalent 1.0-MeV electron fluences as a function of solar cell cover-slide thickness and solar cell output degradation as a function of time in orbit. Anomalies such as low-energy proton damage, cover-slide darkening, and penetration of low-energy solar flare protons into the magnetosphere are also treated.

I. Introduction

The operational lifetime of a communications satellite is strongly dependent upon the capability of its photovoltaic prime power source to withstand the damaging effects of the space radiation environment. Accurate assessment of this environment is essential in the design of communication satellites and in evaluation of their performance. Until the launch of ATS-1 into synchronous orbit late in 1966, data depicting the radiation environment of the geostationary orbit were sparse and unreliable. This uncertainty forced spacecraft designers to incorporate extremely high safety margins into the design of their photovoltaic power sources to allow for radiation degradation. These designs were unduly conservative in many cases but proved to be inadequate in other instances.

The present effort incorporates the data obtained by ATS-1, as well as earlier data, into a working engineering model of the space radiation environment encountered by a communications satellite, and delineates the effects of this environment on the spacecraft's prime power source.

Curves and analytical approximations are developed for the time-integrated radiation fluxes encountered by a communications satellite inserted into synchronous orbit from both a Hohman transfer orbit and a spiral-up transfer orbit. The corresponding radiation fluences include trapped protons and electrons encountered in the geostationary orbit and in the transfer orbit, as well as solar flare protons encountered in the synchronous orbit.

II. Environment

The radiation environment encountered by a communication satellite is many faceted, running the gamut from cosmic rays to micrometeoroids. Emphasis in this report is placed on the trapped proton and electron and solar flare proton components of the environment since these particles inflict the most serious damage on spacecraft components.

Transfer Orbit Environment

During the course of attaining synchronous equatorial orbit, a communication satellite may spend several hours, several days or several months in its transfer orbit. For direct injection, the spacecraft is placed directly into synchronous orbit with a negligible encounter with the radiation belts during the transfer period. For injection from a Hohman transfer ellipse as used by INTELSAT, the satellite may spend up to six days in its transfer orbit with a substantial exposure to the high intensity radiation belts. Also, the Molniya communication satellites operate from an orbit nearly the same as that of the INTELSAT transfer orbit. Future communication satellites may be injected into synchronous orbit from a spiral-up transfer orbit, a mission requiring about ninety days for completion. In order to prevent serious radiation damage to the solar cells during such a mission, shielding far in excess of that now provided on INTELSAT satellites would be required.

Maps of the trapped radiation belts have been compiled by Vette et al[1] (Figure 1) in several documents published by NASA. These maps were formulated from experimental satellite data collected during the period from 1961 to 1967 and constitute the most comprehensive model of the space radiation environment presently available. The Vette data include electron and proton fluxes at synchronous altitude, which were obtained from satellites in highly elliptical orbits which passed periodically through the proper regions of space. The Vette data are therefore not considered to be as accurate as data provided from the ATS-1 satellite during the 1967-1969 period.

*This paper is based upon work performed at COMSAT Laboratories under INTELSAT sponsorship.

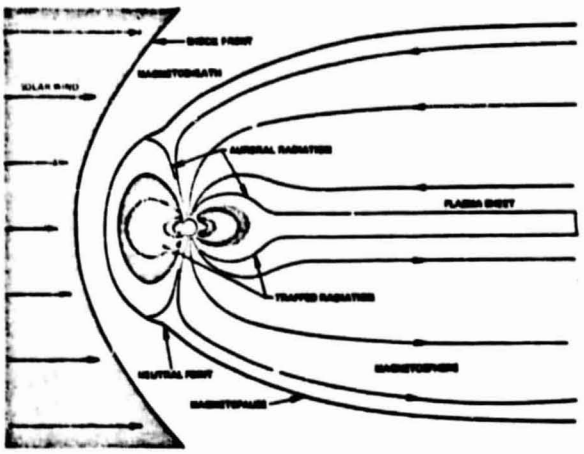

FIGURE 1. NEAR EARTH SPACE RADIATION ENVIRONMENT

With the use of the Vette models and appropriate transfer orbit parameters in a computer program, it has been possible to assess the radiation environment encountered by a spacecraft in the Hohman transfer orbit and in the proposed spiral-up transfer orbit. The results are presented in Tables 1 through 4 as particle fluences for protons and electrons as a function of energy. The environment represented in Tables 1 and 2 is nearly identical to that which would be experienced by a Molniya satellite in one revolution or approximately eleven hours.

Proton Energy (MeV)		Proton Fluence (p/cm^2/orbit)
Lower Limit	Upper Limit	
4.00	6.75	3.235×10^8
6.75	9.50	1.342
9.50	12.25	0.579
12.25	15.00	0.255
15.00	18.75	0.0513
18.75	22.50	0.0378
22.50	26.25	0.0281
26.25	30.00	0.0210
30.00	35.00	0.0291
35.00	40.00	0.0161
40.00	45.00	0.00960
45.00	50.00	0.00610
50.00	62.50	0.00467
62.50	75.0	0.00303
75.00	100.0	0.00389
100.0	200.0	0.00652

TABLE 1. DIFFERENTIAL PROTON FLUENCE PER HOHMAN TRANSFER ORBIT

Electron Energy (MeV)		Electron Fluence (e/cm^2/orbit)
Lower Limit	Upper Limit	
0.30	0.50	2.182×10^{10}
0.50	0.70	1.097
0.70	0.90	0.606
0.90	1.00	0.190
1.00	1.10	0.145
1.10	1.20	0.114
1.20	1.30	0.0883
1.30	1.50	0.122
1.50	1.60	0.0407
1.60	1.80	0.0596
1.80	1.90	0.0208
1.90	2.00	0.0164
2.00	2.30	0.0334
2.30	2.70	0.0226
2.70	3.00	0.00829
3.00	3.50	0.00727
3.50	4.00	0.00320

TABLE 2. DIFFERENTIAL ELECTRON FLUENCE PER HOHMAN TRANSFER ORBIT

ELECTRON ENERGY (E in MeV)	ELECTRON FLUENCE (e/cm^2 with energy greater than E)
0.5	7.62×10^{13}
0.75	2.33
1.5	0.400
2.5	0.0871
4.0	0.0249
7.0	0.0112

TABLE 3. INTEGRAL ELECTRON FLUENCE FOR 90-DAY SPIRAL-UP TRANSFER ORBIT

PROTON ENERGY (E in MeV)	PROTON FLUENCE (p/cm^2 with energy greater than E)
0.4	8.6×10^{14}
1.4	1.4
4.0	0.021
5.0	0.012
10.0	0.0029
15.0	0.00058
30.0	0.00017

TABLE 4. INTEGRAL PROTON FLUENCE FOR 90-DAY SPIRAL-UP TRANSFER ORBIT

Due to the relatively short time spent by the spacecraft in its transfer orbit and to the effective shielding against solar flare protons by the earth's magnetic field at low altitudes, the effects of all other radiations on satellite performance are completely negligible.

Geostationary Orbit Environment

The principal radiation degradation sustained by components in an INTELSAT spacecraft is induced by the charged particle environment encountered over a long time period in the synchronous equatorial orbit. In addition to charged

particle damage, cosmic rays, ultraviolet light, and micrometeoroids tend to produce effects which are detrimental to satellite performance in varying degrees.

Trapped Electrons

Electron data collected from detectors aboard ATS-1 have been analyzed and are displayed graphically in Figure 2. The solid curve depicts the time-averaged integral electron flux as a function of energy. The broken curve represents the softer spectrum obtained from using Vette's data.

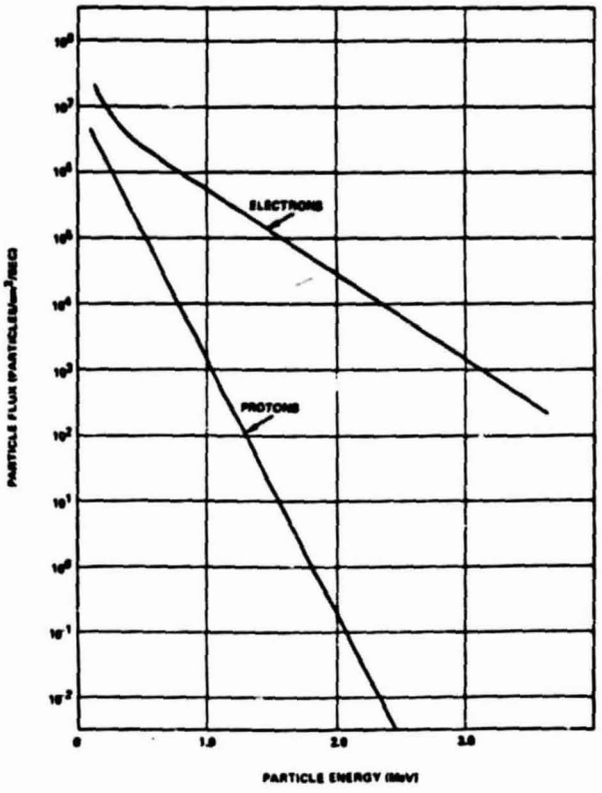

FIGURE 2. TIME-AVERAGED TRAPPED FLUX AT SYNCHRONOUS ALTITUDE

The ATS-1 data have been curve fitted by two approximating expressions, one following a power law and the other being exponential. These expressions are as follows:

$0.05 \leq E \leq 0.5,$

$$\Phi_e(> E) = 7.96 \times 10^5 \, E^{-1.56} \qquad (1a)$$

$0.5 \leq E,$

$$\Phi_e(> E) = 1.00 \times 10^7 \exp(-2.94 \, E) \qquad (1b)$$

where E = electron energy in MeV, and

$\Phi_e(> E)$ = electron flux in electrons/cm^2/sec with energy greater than E (integral flux).

One of the interesting sidelights resulting from analysis of the ATS-1 electron data is the periodic variation of the electron flux intensity shown in Figure 3. The electron flux drops several orders of magnitude (essentially to zero) once every 6-1/3 days after remaining relatively constant during this time period. Such variations exemplify the need to develop a model of the synchronous radiation environment from data recorded by detectors aboard experimental satellites in the geostationary orbit.

Trapped Protons

The trapped proton flux encountered at synchronous altitude is negligible above energies of a few MeV. The time-averaged trapped proton flux over the energy range of 0.11 to 4.0 MeV is represented graphically in Figure 2. This data was obtained from a report by King[2] and may be fitted by the exponential approximating equation:

$0.11 \leq E \leq 4.0,$

$$\Phi_p(> E) = 1.80 \times 10^7 \exp(-9.0 \, E) \qquad (2)$$

where E = proton energy in MeV, and

$\Phi_p(> E)$ = proton flux in protons/cm^2/sec with energy greater than E.

Solar Flare Protons

Although many theories have been advanced to predict solar flare activity, it is still virtually impossible to accurately determine in advance the total solar proton fluence that would impinge on a communication satellite over a several-year period. Since reliable predictions are unavailable, it becomes advantageous to examine the solar proton fluence recorded during the last complete solar cycle and correlate this information with current solar flare activity.

The last complete solar cycle, Cycle 19, began in April 1954 and ended in October 1964. This was the first cycle

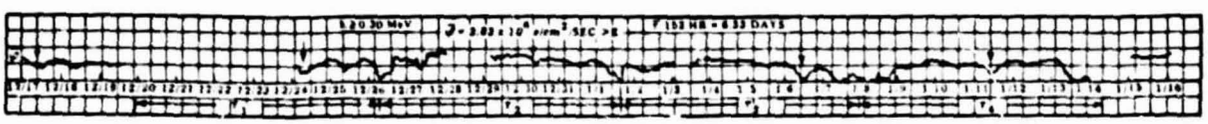

FIGURE 3. VARIATION OF ELECTRON FLUX AT SYNCHRONOUS ALTITUDE WITH TIME

during which solar flare protons were monitored by detectors aboard satellites. Data from these satellite measurements as well as rocket and balloon data have been collected and analyzed by COMSAT Laboratories. The total solar flare proton fluence for Cycle 19 has been determined as a function of proton energy. These data, which are plotted in Figure 4, may be curve fitted by the following expression:

$$\text{Cycle 19:}\quad \Phi_{sp}\ (> E) = 1.5 \times 10^{12} E^{-1.53} \qquad (3)$$

where E = solar proton energy in MeV, and

$\Phi_{sp}\ (> E)$ = integral solar proton fluence in protons/cm^2.

The year of maximum intensity during Cycle 19 was 1959 and the solar proton fluence data for this year is also shown in Figure 4. The fluence data for 1959 may be curve fitted by the following expression:

$$1959:\quad \Phi_{sp}\ (> E) = 1.3 \times 10^{12} E^{-1.73} \qquad (4)$$

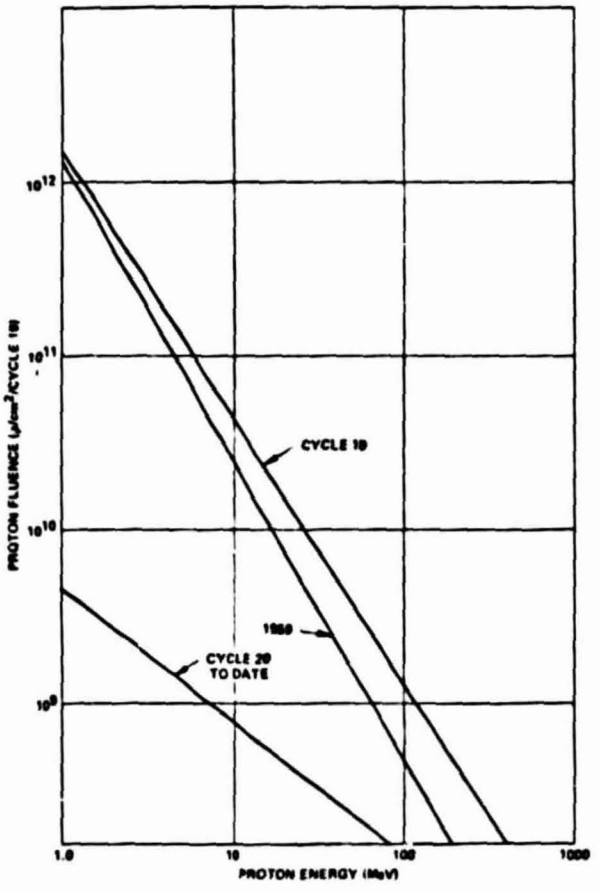

FIGURE 4. UNATTENUATED SOLAR PROTON FLUENCE

A satellite at synchronous altitude would not be expected to encounter the total proton fluence represented in Figure 4 due to the protective shielding of the earth's magnetic field. This field falls off from the earth's surface approximately as a dipole field and thus the higher the energy of the impinging solar particle, the more deeply it penetrates the field. Only extremely high energy protons are capable of reaching the earth's surface.

An analytical model for predicting the proton energy required to penetrate the earth's magnetic field to various altitudes has been developed by Stormer. This model predicts that, during periods when the geomagnetic field is undisturbed, a spacecraft at synchronous altitude will be shielded from solar protons with energies less than 30 MeV. However, extension of Stormer's work to include a disturbed magnetic field at synchronous altitude--the case during a solar storm--indicates that solar protons with energies as low as 4.0 MeV will penetrate to synchronous altitude, as is shown graphically in Figure 5. Penetration of low-energy protons to synchronous altitude was borne out by data from ATS-1. Indeed the number of protons of all energies was observed to increase substantially during solar flare activity. Unfortunately this fact was not taken into account in the design of spacecraft prior to the launch of ATS-1.

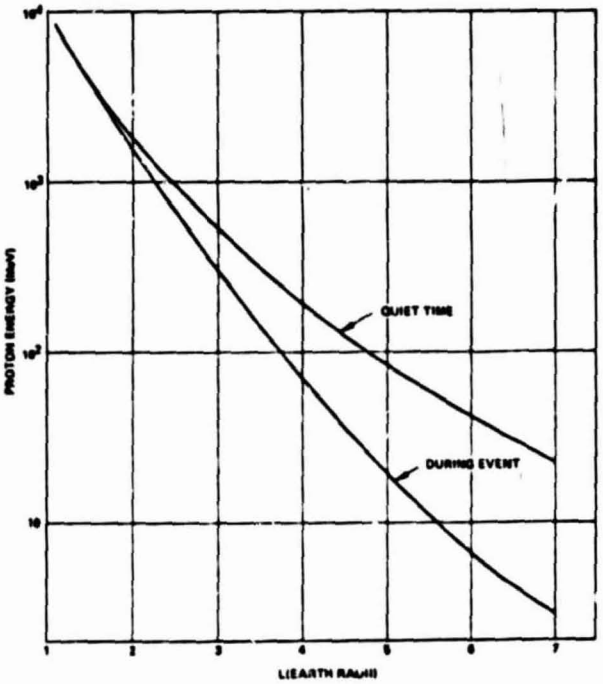

FIGURE 5. PROTON TOTAL CUTOFF ENERGY FOR GEOMAGNETIC STORM AND QUIET TIMES

Solar Cycle 20 is at this time experiencing its maximum. Satellite data is continually being collected and analyzed

with the aim of providing a solar flare proton fluence model for Cycle 20 as soon as feasible. The solar fluence spectrum for Cycle 20 through 1968 is also shown in Figure 4. Since Cycle 19 exhibited a worst case from the standpoint of solar proton activity, and since Cycle 20 is not expected to exceed Cycle 19 in proton activity, the solar flare proton model of Cycle 19 will continue to be recommended for use in satellite design calculations.

Galactic Cosmic Rays

The integrated yearly intensity of galactic cosmic rays reaching the vicinity of the earth has remained fairly constant at about 10^8 particles/cm^2/year for over 50,000 years.[3] It is generally accepted that for energies above 1.0 BeV, the cosmic ray integral energy spectrum can be represented by the following expression:

$$\Phi_c(> E) = CE^{-\gamma} \quad \frac{\text{nuclei}}{\text{m}^2\text{-sterad-sec}} \qquad (5)$$

where E = total energy of nuclei in BeV,

$\Phi_c(> E)$ = integral particle flux,

$1.4 \leq \gamma \leq 2.13$, and

$5 \times 10^3 \leq C \leq 10^7$.

In general, the particle intensity and interaction cross section for galactic cosmic rays are too small to produce detrimental effects in satellite components.

Ultraviolet Radiation

Ultraviolet radiation incident on a spacecraft produces color changes in thermal coatings and darkening of solar cell cover assemblies, thus reducing their efficiencies. The Johnson[4] curves for solar uv radiation incident on the earth's upper atmosphere have long been accepted as the standards. However, later data are now available based on work by Thekaekara[5] et al and these data are presented in Table 5. The visible and infrared spectra are also included in the table for reference. Figure 6 shows a comparison of the Johnson and Thekaekara solar irradiance spectra.

Wavelength in microns; P_λ = solar spectral irradiance averaged over a small bandwidth centered at λ, in watts cm^{-2} micron^{-1}; D_λ = percentage of the solar constant associated with wavelengths shorter than wavelength λ; and solar constant = 0.13510 watt cm^{-2}.

λ	P_λ	D_λ	λ	P_λ	D_λ
0.140	0.0000048	0.00050	0.295	0.0584	1.020
0.150	0.0000176	0.00059	0.300	0.0514	1.223
0.160	0.000059	0.00087	0.305	0.0602	1.1430
0.170	0.00015	0.00164	0.310	0.0686	1.668
0.180	0.00035	0.00349	0.315	0.0757	1.935
0.190	0.00076	0.00760	0.320	0.0819	2.227
0.200	0.00130	0.0152	0.325	0.0958	2.555
0.205	0.00167	0.0207	0.330	0.1037	2.925
0.210	0.00269	0.0288	0.335	0.1057	3.312
0.215	0.00445	0.0420	0.340	0.1050	3.702
0.220	0.00575	0.0609	0.345	0.1047	4.090
0.225	0.00649	0.0835	0.350	0.1074	4.483
0.230	0.00667	0.1079	0.355	0.1067	4.879
0.235	0.00593	0.1312	0.360	0.1055	5.271
0.240	0.00630	0.1534	0.365	0.1122	5.674
0.245	0.00723	0.1788	0.370	0.1173	6.099
0.250	0.00704	0.2063	0.375	0.1152	6.529
0.255	0.0104	0.2375	0.380	0.1117	6.949
0.260	0.0130	0.2808	0.385	0.1097	7.359
0.265	0.0185	0.3391	0.390	0.1099	7.765
0.270	0.0232	0.4163	0.395	0.1191	8.189
0.275	0.0204	0.4960	0.400	0.1433	8.675
0.280	0.0222	0.5758			
0.285	0.0315	0.6752			
0.290	0.0482	0.8225			

TABLE 5. SOLAR ULTRAVIOLET IRRADIANCE

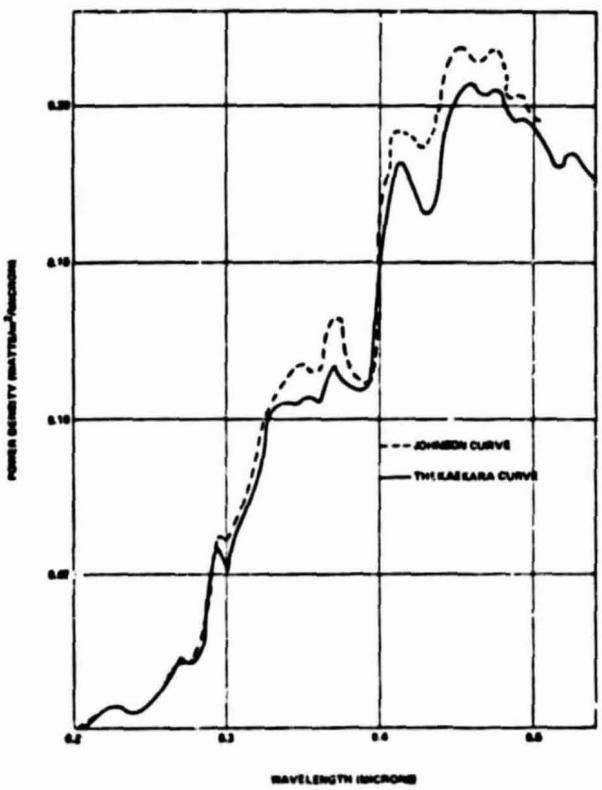

FIGURE 6. SOLAR SPECTRAL IRRADIANCE

Micrometeoroids

Material particles with a broad distribution in size, structure, density, and velocity constitute a flux of micrometeoroids that can potentially prove hazardous to a satellite. The best available estimates of these fluxes as a function of particle mass and penetration capability are shown[6] in Figure 7. A micrometeoroid will generally penetrate a thin target about 1.5 times as thick as the crater depth it would produce in a thick target of the same material. The principal damage expected to be sustained by a spacecraft from micrometeoroids is a reduction in transparency of the solar cell cover slides. The effect is similar to sandblasting the cover glass surface and could result in a light transmission loss as high as 1 percent in a ten-year mission.

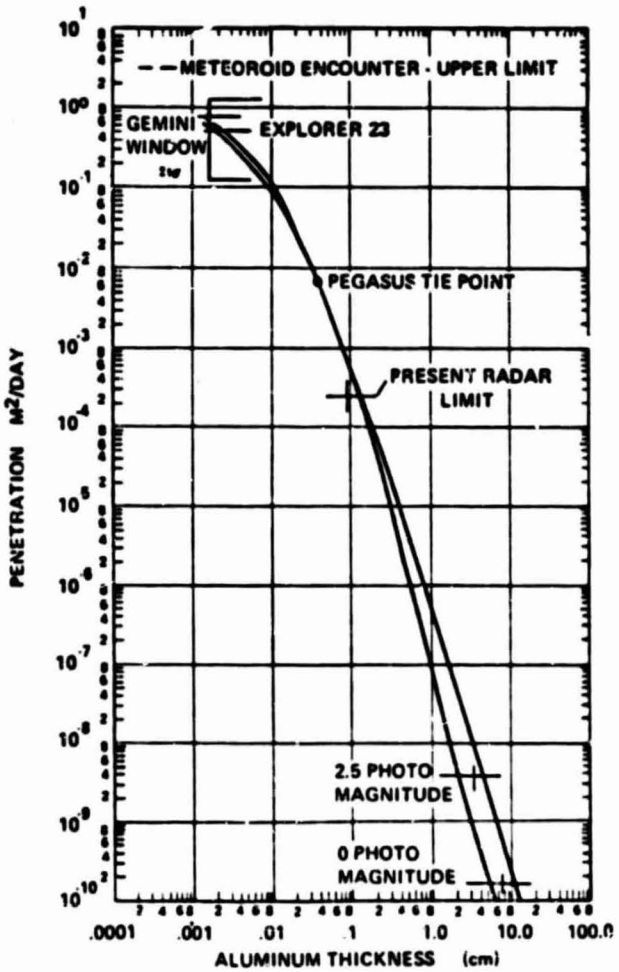

FIGURE 7a. MICROMETEOROID PENETRATION FREQUENCY IN ALUMINUM

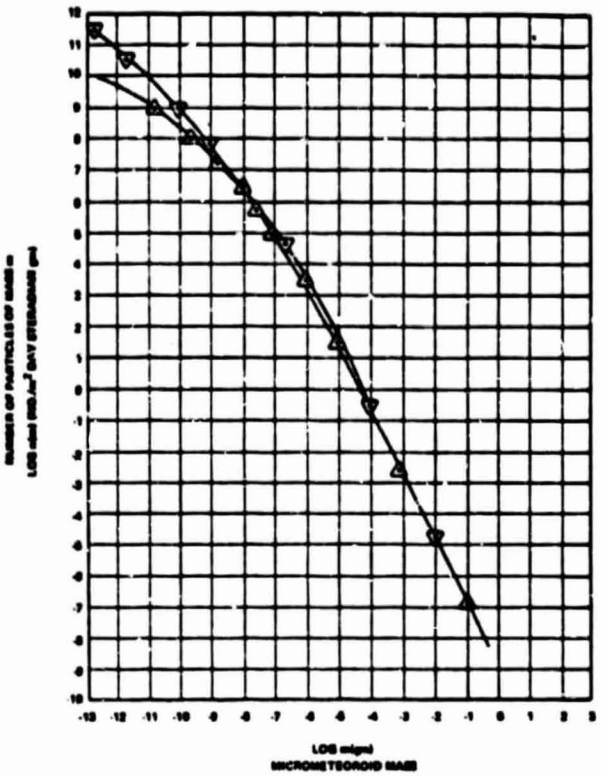

FIGURE 7b. MICROMETEOROID FLUX AS A FUNCTION OF MASS

III. Radiation Effects

The photovoltaic energy converters, which constitute the primary power source on communication satellites, and certain MOS transistors used in the telemetry and command systems, are the spacecraft components most susceptible to performance degradation through exposure to the space radiation environment. The least penetrating of the charged particle radiation--low-energy protons--constitute the greatest hazard to solar cell performance, while the highly penetrating electrons produce the major portion of the damage sustained by MOS transistors housed within the spacecraft. Fortunately, glass shields can be used to prevent low-energy protons from reaching the solar cell and the MOS transistor circuits can be shielded from penetrating electrons by metal housings.

Solar Cell Degradation

Solar cells exposed to charged particle radiation will suffer performance degradation due to two mechanisms. The first effect is a decrease in the base region minority carrier lifetime, because the damaging radiation creates displacements which leads to an increase in the density of recombination centers. The carriers produced by the light entering the cell are consequently less likely to reach the junction before recombination occurs, which produces a reduction in the short circuit current of the cell and, to a lesser

degree, in the open circuit voltage.

The second damage effect is produced by low-energy-charged particles which just penetrate the surface of the solar cell but do not reach the base region. These particles (generally protons) produce generation-recombination centers close to the junction which cause enhanced generation and increased leakage current, thus drastically reducing the open circuit voltage. A second effect which may be produced by low-energy protons is ionization in the antireflective oxide coating on the surface of the solar cell. This ionization can produce a change in the surface potential and invert the silicon at the surface. The resultant inversion layer causes junction leakage to increase, thus reducing the open circuit voltage. It is these effects which can be prevented by shielding the solar cell with a minimum thickness of cover glass. However, care must be taken to fully cover the photo-sensitive surface of the solar cell. The decrease in voltage, and thus power output, due to low-energy protons is not a linear function of the exposed surface area and a small uncovered area may result in a large decrease in output power.

This type of damage was suffered by the main solar arrays of ATS-1 and INTELSAT II F-4. A typical curve[7] depicting power output degradation of a silicon solar cell with a small area of surface exposed is shown in Figure 8. Protons of energies 150 keV and 270 keV were chosen to ensure their penetration into the surface and junction regions of the solar cell but not beyond. A satellite which is in the geostationary orbit for three years will be exposed to fluences of about 10^{14} protons/cm^2 having energies in the 150- to 270-keV range. Thus full shielding of the light sensitive area of the solar cell is mandatory.

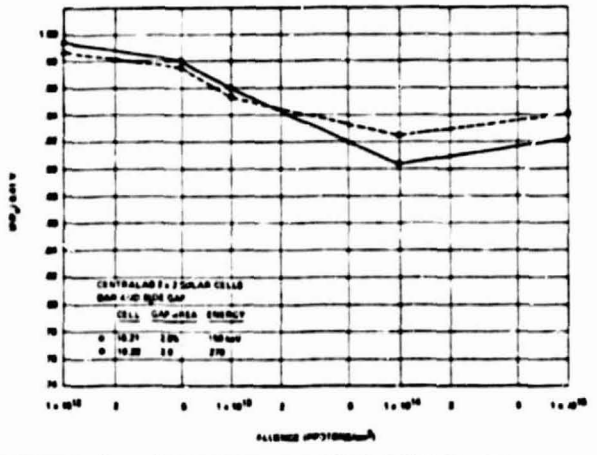

FIGURE 8. PROTON RADIATION DAMAGE IN COVERED SOLAR CELLS WITH BAR AND SIDE GAPS

Equivalent Fluences

As just pointed out, it is relatively simple to protect solar cells on spacecraft from the damaging effects of low-energy protons by utilizing appropriate cover slides. However, the more penetrating radiation can not be prevented from reaching the base region of the solar cell by any practical means. Thus it is imperative in attempting to size the solar array for a spacecraft to be able to predict the solar cell performance degradation due to penetrating radiation over the lifetime of the mission. The following analysis is set forth to aid spacecraft designers in predicting solar array degradation.

It was stated that penetrating radiation causes a decrease of the minority carrier lifetime in the base region of the solar cell. A decrease in minority carrier lifetime will subsequently reduce the minority carrier diffusion length and it is the change in diffusion length with irradiation that is usually measured. This decrease in diffusion length has been measured experimentally and found to fit the following analytical expression:

$$\frac{L^2}{Lo^2} = \frac{1}{1 + K\Phi Lo^2} \qquad (6)$$

where L = diffusion length after irradiation (cm),

Lo = diffusion length before irradiation (cm),

Φ = radiation fluence (particles/cm^2), and

K = radiation damage coefficient (particles^{-1}).

The damaging radiation represented by Φ may be either electromagnetic or particulate in nature, and the damage coefficient depends on the type of radiation, its energy and incident angle, as well as the type of semiconductor material.

In space, the primary types of damaging radiation are protons and electrons. These particle fluxes are energy dependent and are considered to have an isotropic distribution. Thus for space, the value of $K\Phi$ in Equation 6 must be determined by evaluating the triple integral:

$$K\Phi = \int_E \int_\Omega \int_t K'(E,\Omega)\, \varphi(E,\Omega,t)\, dE\, d\Omega\, dt \qquad (7)$$

where $K'(E,\Omega)$ = damage coefficient for a particular type of radiation,

$\varphi(E,\Omega,t)$ = particle flux,

E = energy of particles,

Ω = angle of incidence of particles, and

t = time.

Evaluation of the integral is performed in the following manner. The radiation flux in space is generally considered to be isotropic and thus angle dependence may be eliminated from the flux term. Further, the fluxes in space may be time averaged, allowing the integration over time to be replaced by the product of the time-averaged flux and the elapsed time interval of interest.

Values of the radiation damage coefficient for electrons and protons of various energies and incident angles have been determined for n on p, 10Ω-cm, bare silicon solar cells and normalized to the damage coefficient for normally incident, 1.0-MeV electrons. The resultant quantity is labeled the (normalized) equivalent 1.0-MeV electron damage coefficient and is a function of energy only. Based upon this experimental data and the known shielding characteristics of cover slides, equivalent damage coefficients as a function of cover-slide thickness have been computed[8]. Figures 9 and 10 depict the results of these data and calculations.

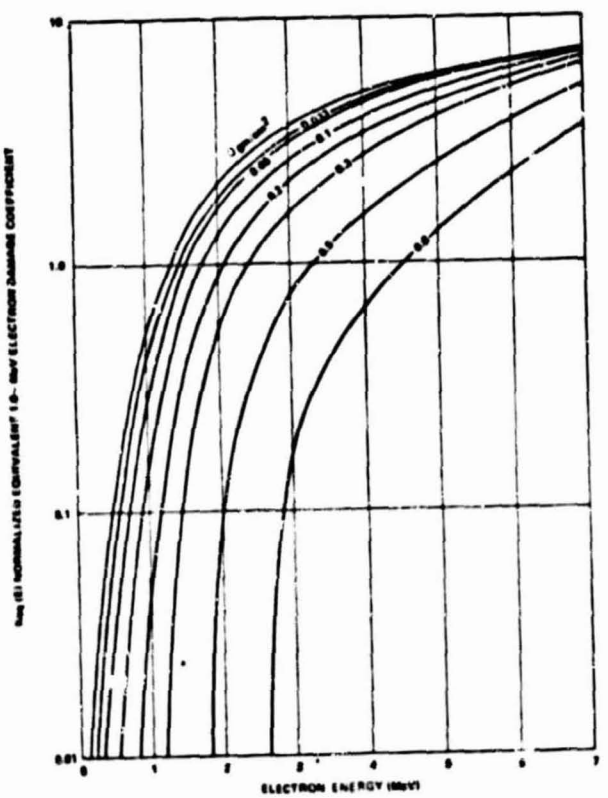

FIGURE 9. EQUIVALENT DAMAGE COEFFICIENT FOR A MONOENERGETIC ISOTROPIC ELECTRON FLUX ON N/P SILICON SOLAR CELLS AS A FUNCTION OF ELECTRON ENERGY AND SOLAR CELL COVER-SLIDE THICKNESS

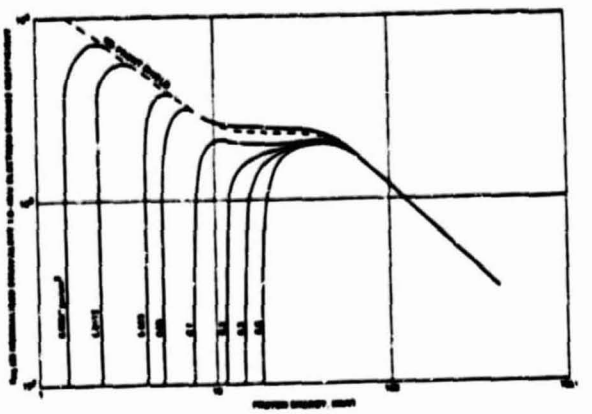

FIGURE 10. EQUIVALENT DAMAGE COEFFICIENT FOR A MONOENERGETIC ISOTROPIC PROTON FLUX ON N/P SILICON SOLAR CELLS AS A FUNCTION OF PROTON ENERGY AND SOLAR CELL COVER-SLIDE THICKNESS

The triple integral of Equation 7 may thus be reduced to a single integral over the energy range of interest or

$$K\Phi = K_1 t \int_E Keq\ (E)\ \varphi\ (E)\ dE \qquad (8)$$

where K_1 = damage coefficient for normally incident 1.0-MeV electrons on a bare silicon solar cell,

t = time interval (sec),

Keq = normalized equivalent damage coefficient for a particular type of particle (dimensionless), and

φ = particle flux (particles/cm^2/sec).

An integral similar to that in Equation 8 must be evaluated for each type of radiation of interest. Numerical integration of these integrals can be readily performed for any space environment of interest for which the fluence data are available. The corresponding change in diffusion length with time in space may be found from the following equation:

$$\frac{L^2}{Lo^2} = \frac{1}{1 + K_1 t \int_E [Kee\ (E)\ \varphi e\ (E) + Kep\ (E)\ \varphi p]\ dE} \qquad (9)$$

where Kee = normalized equivalent damage coefficient for electrons,

Kep = normalized equivalent damage coefficient for protons,

$\varphi e(E)$ = electron flux, and

$\varphi p(E)$ = proton flux.

Computer programs have been formulated to generate the equivalent 1.0-MeV electron fluence at the solar cell surface as a function of front shield thickness for the damaging charged particle environments encountered by an INTELSAT spacecraft. The results of these programs are shown in Figures 11 and 12 as equivalent 1.0-MeV fluences for spiral-up and Hohman transfer orbit trapped protons, trapped electrons and solar flare protons in the geostationary orbit, and trapped protons in the Molniya orbit. Other forms of particle radiation equivalents are not presented since they are negligible from a damage standpoint.

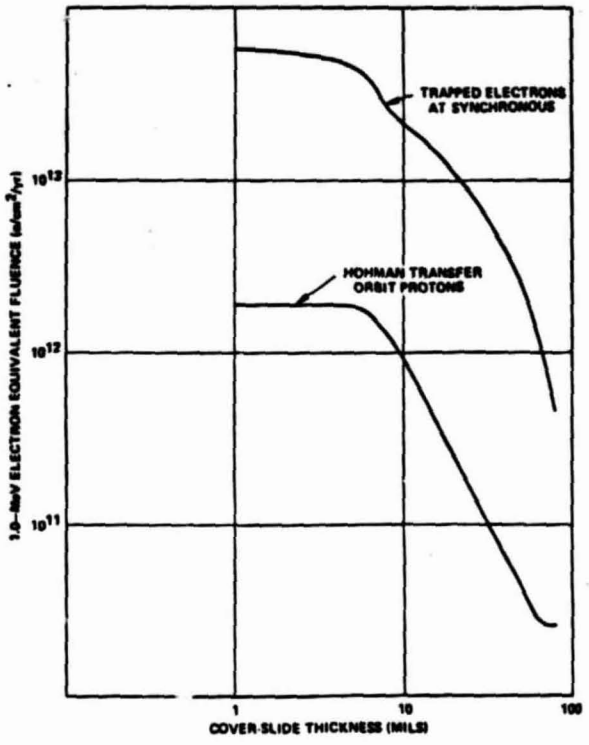

FIGURE 11. EQUIVALENT 1.0-MeV ELECTRON DOSES

Degradation Parameters

It has been demonstrated experimentally[9] that the short circuit current of a solar cell varies with the logarithm of the minority carrier diffusion length in accordance with the following expression:

$$Isc = a + b \log L \qquad (10)$$

where

Isc = short circuit current in amperes,

L = minority carriers diffusion length in centimeters, and

a & b are constants.

Thus, for a solar cell which has sustained radiation damage, the following relationship exists:

$$\frac{Isc}{Isco} = \frac{a + b \log L}{a + b \log Lo} = \frac{1 + c \log L}{1 + c \log Lo} \qquad (11)$$

where $c = b/a$,

Isco = short circuit current before irradiation,

Isc = short circuit current before irradiation, and

Lo = minority carrier diffusion length before irradiation.

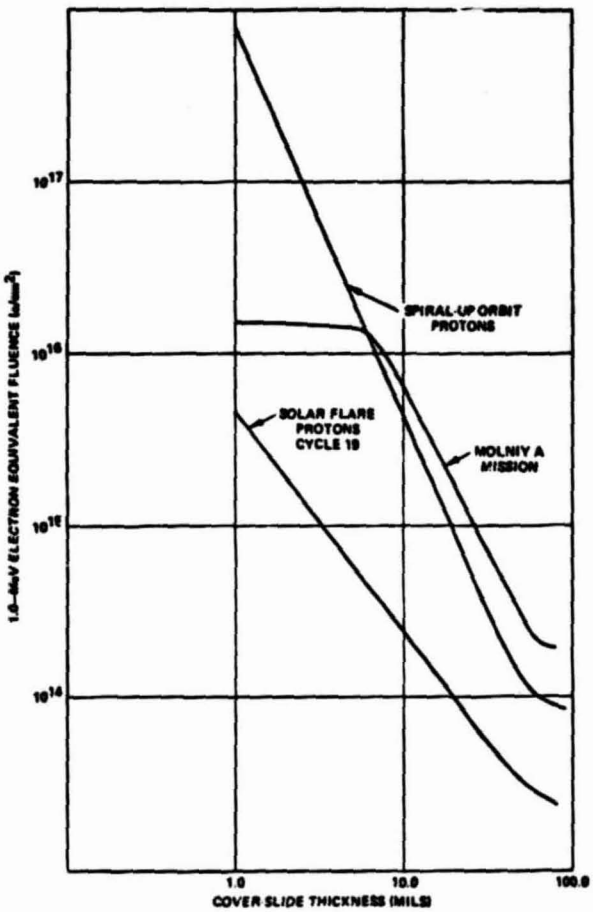

FIGURE 12. EQUIVALENT 1.0-MeV ELECTRON DOSES

C-3

Substitution of Equation 6 into Equation 11 yields the following:

$$\frac{Isc}{Isco} = \frac{1 - c/2 \log [1/Lo^2 + K\Phi]}{1 + c \log Lo} \qquad (12)$$

In order to determine the actual behavior of solar cells subject to irradiation by 1.0-MeV electrons, typical INTELSAT III silicon solar cells were irradiated and their decrease in short circuit current was recorded. Figure 13 shows the result of these irradiations and indeed the curve is typical of all silicon solar cells. Equation 12 may be correlated with the experimental data by evaluating constants c, Lo, and K. In this case $K = K_1$, the damage coefficient for 1.0-MeV electrons. (The cells irradiated were unshielded.)

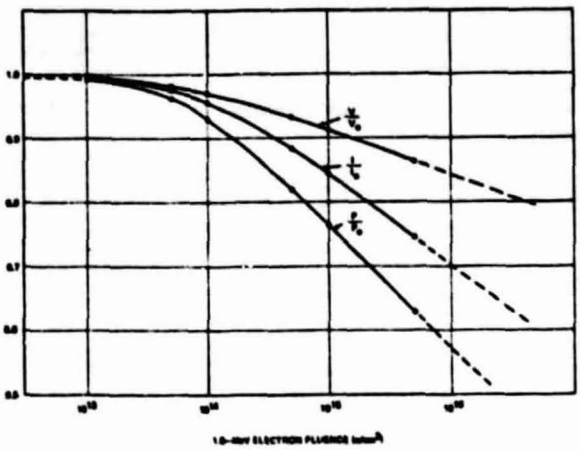

FIGURE 13. OUTPUT PARAMETER DEGRADATION--INTELSAT III SOLAR CELLS

The value of K_1 has been determined to be 5.8×10^{-11} for n on p, 10Ω-cm, silicon solar cells. Using this value and curve-fitting techniques, it is found that

$$Lo = 0.015 \text{ cm, and}$$

$$c = 0.189.$$

The dimensions of Lo, K, and Φ in Equation 12 are inherent in its derivation and, in using this equation, Lo is expressed in centimeters and Φ, in particles/cm^2.

Expressions analogous to Equation 12 may be derived for open circuit voltage and maximum power degradation; however, since actual experimental curves are available for specific solar cells, it is preferable to utilize these curves for actual computations. Figure 13 shows open circuit voltage and maximum power degradation curves for INTELSAT III solar cells.

Cover Assembly Degradation

It has been known for some years that the glass cover-slide material used to shield solar cells from particulate radiation was susceptible to darkening under exposure to intense fluxes of protons and electrons. It was also known that the adhesive material used to attach the cover slides to the solar cell would darken when exposed to ultraviolet and particulate radiation. However, through use of uv filters and choice of the proper cover-slide material, these effects were thought to have been reduced to negligible proportions. This conclusion was drawn after ground tests in the laboratory. Latest ATS-1 data show that this darkening effect can cause up to an 8-percent decrease in power output of a solar cell. While conclusive data are not yet available, it is believed that the darkening is caused by the synergistic effects of ultraviolet and particle radiation. For design purposes, in the absence of reliable data, INTELSAT IV spacecraft are assumed to experience a 7.5-percent power degradation due to this effect.

Internal Component Degradation

Many of the semiconductor devices used in communications satellites would suffer performance degradation if exposed to the radiation environment at synchronous altitude for a prolonged period. Natural shielding of these components is provided by their metal housings. This shielding is adequate except in the case of the highly sensitive MOS devices. Figure 14 shows the radiation dose received by satellite components as a function of shielding thickness. It may be seen that the dose due to solar flare (and this is also true for trapped protons) is essentially negligible compared to that sustained from trapped electrons. Since most semiconductor components will operate satisfactorily at accumulated doses of 10^6 rad(Si), a nominal 1/16-inch aluminum housing will provide adequate shielding for a ten-year mission at synchronous altitude. However, MOS devices may tend to malfunction after accumulating a dose of only 10^4 rad(Si) and will require about 3/16 inch of shielding for a ten-year mission. Such shielding requirements present no particular design problems but necessarily must be taken into account.

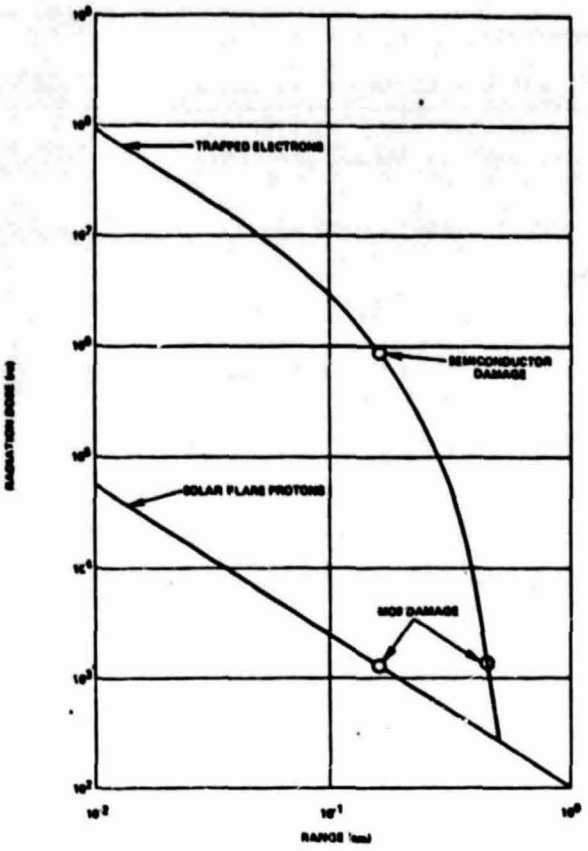

FIGURE 14. INTERNAL RADIATION DOSE AT SYNCHRONOUS ALTITUDE

IV. Summary

The radiation environment encountered by a satellite in the geostationary orbit has been presented along with data to enable prediction of the effects of this environment on satellite components. The environmental model was determined from analysis of latest satellite data and is considered the most accurate to date. The method of predicting radiation damage to silicon solar cells by correlation of various particle fluxes with a 1.0-MeV electron current does not give a true picture, although it does represent the best method presently available and allows for conservative sizing of a solar array. The equivalent 1.0-MeV electron fluences encountered by various communication satellites and the effects of these fluences are shown in Table 6.

TABLE 6. SOLAR CELL RADIATION DAMAGE

References

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